EXHIBIT A

Courtland L. Reichman (SBN 268873)
McKOOL SMITH HENNIGAN, P.C.
255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065
Telephone: (650) 394-1400
Facsimile: (650) 394-1422

Christopher Bovenkamp
(Pro Hac Vice application to be filed)
McKOOL SMITH, P.C.
300 Crescent Court
Suite 1500
Dallas, TX 75201
TEL (214) 978-4940
FAX: (214) 978-4044
cbovenkamp@mckoolsmith.com

Jeanne E. Irving (SBN 81963)
McKOOL SMITH, P.C.
865 South Figueroa St.
Suite 2900
Los Angeles, CA 90017
TEL 213.694.1015
FAX 213.694.1234
jirving@mckoolsmithhenningan.com

Attorneys for Plaintiff
Media Rights Technologies, Inc.

UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

Media Rights Technologies, Inc., Plaintiff, vs. Microsoft Corporation, Defendant.	Case No. CV 13-01916 PSG **COMPLAINT FOR PATENT INFRINGEMENT AND JURY DEMAND**

McKool Smith Hennigan, P.C.
255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065

COMPLAINT

Plaintiff Media Rights Technologies, Inc. ("MRT"), files this Complaint against Defendant Microsoft Corporation ("Microsoft") and alleges as follows:

PRELIMINARY STATEMENT

1. MRT has been involved in creating and developing software-based, content-control solutions for more than ten years. MRT's multifaceted business includes the operation, through a subsidiary, of the website www.bluebeat.com. MRT also owns an extensive portfolio of patents covering the foundational and groundbreaking inventions of Hank Risan and Edward Vincent Fitzgerald. When Microsoft struggled to solve the problem of effective digital rights management in the emerging Internet, MRT came up with the solution. MRT disclosed its technology and solution to Microsoft, and engaged in extensive discussions with Microsoft. Microsoft, without permission or authorization, implemented MRT's solutions and technology to Microsoft's significant commercial benefit. Microsoft continues using MRT's patented technology to this day in its operating systems, software applications, and platforms.

JURISDICTION

2. This is a civil action for patent infringement arising under the patent laws of the United States, Title 35, United States Code, including 35 U.S.C. §§ 271 *et seq.* and 281-285. Jurisdiction is conferred on this Court pursuant to 28 U.S.C. §§ 1331 and 1338(a).

VENUE

3. Microsoft is transacting and/or has transacted business within the State of California. Microsoft, directly or through intermediaries, is committing and/or has committed acts of infringement in the State of California, including at the very least, developing, distributing, selling, offering for sale, advertising, using and/or supporting products or services that fall within one or more claims of the Asserted Patents (as described below). Microsoft is therefore subject to the

personal jurisdiction of this Court.

4. Microsoft, directly or through intermediaries, has committed acts of infringement in this District, including at the very least, developing, distributing, selling, offering for sale, advertising, using and/or supporting products or services that fall within one or more claims of MRT's patents-in-suit. Accordingly, venue to adjudicate whether the Asserted Patents are infringed is appropriate in the Northern District of California pursuant to 28 U.S.C. §§ 1391, 1400(b), and 1404(a).

PARTIES

5. MRT is duly incorporated, organized and existing under the laws of the State of California, with its principal place of business and corporate headquarters in Santa Cruz, California.

6. Microsoft is incorporated, organized and existing under the laws of the State of Washington. Microsoft operates at least three offices in the Northern District of California including offices in Mountain View, Sunnyvale and San Francisco. Microsoft may be served with process through its registered agent Corporation Service Company, doing business in California as CSC - Lawyers Incorporating Service, 2710 Gateway Oaks Dr. STE 150N, Sacramento CA 95833.

BACKGROUND

7. MRT was founded in 2001. It develops technologies that enable the effective transmission, protection and monetization of digital content. It also protects and monetizes royalties for copyright owners such as artists, filmmakers and songwriters, and safeguards the interests of their partners, publishers and broadcasters. MRT operates BlueBeat Music (BlueBeat; BlueBeat.com), an Internet broadcast music service.

8. MRT developed and owns a patent portfolio including but not limited to United States Patent No. 7,316,033 (the "'033 patent"), United States Patent No. 7,578,002 (the "'002 patent"), United States Patent No. 7,904,964 (the "'964 patent"), and United States Patent No. 8,132,263 (the

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255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065

"'263 patent"). The applications resulting in the '033 patent, '002 patent, '964 patent and '263 patent were originally filed in the United States Patent and Trademark Office (the "PTO") by Music Public Broadcasting, Inc. ("MPB"). Each of the inventors listed in these patents was an employee of MPB when the inventions contained in the '033 patent, '002 patent, '964 patent and '263 patent applications were filed and assigned the aforementioned patent applications to MPB. In July 2004, MPB changed its name to Media Rights Technologies, Inc.

9. MRT's patent portfolio revolves around the concept MRT refers to as the "Controlled Data Pathway." MRT's Controlled Data Pathway technology, including the inventions disclosed in the above identified patents, resolves persistent issues such as securing digital content during storage, transmission, and presentation. MRT's Controlled Data Pathway technology was designed to prevent unauthorized use of, for example, media content that is subject to (or potentially subject to) use restrictions so that the owners of the media content could secure and monetize their legally protected works in the context of the relevant distribution network. The claims of the Asserted Patents (as described and identified below) specifically describe some of these inventions.

10. MRT engaged in discussions with the industry about the benefits of its technology, including the Controlled Data Pathway. For example, MRT had discussions with the Recording Industry Association of America ("RIAA") and provided the RIAA with background material and its software for testing and evaluation.

11. MRT had detailed discussions with Microsoft about its technology. MRT made its technology available to Microsoft for review and analysis. On information and belief, Microsoft used the information it learned from MRT, including information relating to the Controlled Data Pathway technology, to build what Microsoft refers to as the "Protected Media Path" technology and architecture. Microsoft incorporated the Protected Media Path technology and architecture into the Windows Operating Systems including Windows Vista, Windows 7, and Windows 8; Windows

McKool Smith Hennigan, P.C.
255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065

Media Center, and Windows Media Player.

12. Many different Microsoft applications, software programs, operating systems, platforms, and services utilize the Protected Media Path technology. These applications, software programs, operating systems, platforms, and services infringe MRT's patent portfolio including the '033 patent, '002 patent, '964 patent and '263 patent. Microsoft is infringing the '033 patent, '002 patent, '964 patent, and '263 patent in California and elsewhere in the United States by, for example, its making, selling, offering for sale, and using the applications, software programs, operating systems, platforms, and services that utilize the Protected Media Path technology including Windows Operating Systems, Windows Media Center and Windows Media Player. Upon information and belief, Microsoft is currently developing, marketing and selling its products and services, including its Windows Operating Systems, Windows Media Center and Windows Media Player, in California (including the Northern District) and elsewhere in the United States. Defendant Microsoft also has commercial relationships with various technology partners to promote, sell, offer for sale, and/or advertise the above identified Microsoft products and services in this State and this District.

THE PATENTS

13. United States Patent No. 7,578,002 (referred to herein as the "'002 patent"), entitled "Controlling Interaction of Deliverable Electronic Media," was duly and legally issued after a complete and thorough examination to inventors Hank Risan and Edward Vincent Fitzgerald on August 18, 2009. MRT owns by assignment the entire right, title, and interest in the '002 patent, and is entitled to sue for past and future infringement. A true and correct copy of the '002 patent is attached as Exhibit A and incorporated herein by reference.

14. United States Patent No. 7,316,033 (referred to herein as the "'033 patent"), entitled "Method of Controlling Recording of Media," was duly and legally issued after a complete and

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255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065

thorough examination to inventors Hank Risan and Edward Vincent Fitzgerald on January 1, 2008. MRT owns by assignment the entire right, title, and interest in the '033 patent, and is entitled to sue for past and future infringement. A true and correct copy of the '033 patent is attached as Exhibit B and incorporated herein by reference.

15. United States Patent No. 7,904,964 (referred to herein as the "'964 patent"), entitled "Method and System for Selectively Controlling Access to Protected Media on a Media Storage Device," was duly and legally issued after a complete and thorough examination to inventors Hank Risan and Edward Vincent Fitzgerald on March 8, 2011. MRT owns by assignment the entire right, title, and interest in the '964 patent, and is entitled to sue for past and future infringement. A true and correct copy of the '964 patent is attached as Exhibit C and incorporated herein by reference.

16. United States Patent No. 8,132,263 (referred to herein as the "'263 patent"), entitled "Method and System for Selectively Controlling Access to Protected Media on a Media Storage Device," was duly and legally issued after a complete and thorough examination to inventors Hank Risan and Edward Vincent Fitzgerald on March 6, 2012. MRT owns by assignment the entire right, title, and interest in the '263 patent, and is entitled to sue for past and future infringement. A true and correct copy of the '263 patent is attached as Exhibit D and incorporated herein by reference.

17. The '002 patent, '033 patent, '964 patent, and '263 patent (collectively, the "Asserted Patents") cover inventions relating to MRT's Controlled Data Pathway technology and may be applied to methods and systems utilized by software, applications, and operating systems running on computers.

CLAIM FOR PATENT INFRINGEMENT

18. MRT refers to and incorporates herein the allegations of Paragraphs 1-17 above.

19. Microsoft directly infringes one or more claims of each of the Asserted Patents under 35 U.S.C. § 271. Microsoft is making, using, selling, offering for sale, exporting and/or importing

McKool Smith Hennigan, P.C.
255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065

accused products and services which infringe one or more claims of each of the Asserted Patents. The accused products and services of Microsoft include the software, operating systems, applications, platforms, and services that utilize the Microsoft Protected Media Path technology including Windows Operating Systems, Windows Media Center and Windows Media Player (collectively, the "Accused Products and Services"). Further discovery may reveal additional infringing products.

20. Microsoft indirectly infringes one or more claims of each of the Asserted Patents under 35 U.S.C. § 271(b). Upon information and belief, Microsoft has induced and continues to induce its customers and/or users of the Accused Products and Services to infringe one or more claims of the Asserted Patents. Upon information and belief, Microsoft specifically intends for its customers and/or users of the Accused Products and Services to infringe one or more claims of the Asserted Patents in the United States because Microsoft knew, upon information and belief, of the Asserted Patents and designed the Accused Products and Services such that they would each infringe one or more claims of each of the Asserted Patents if made, used, sold, offered for sale or imported into the United States. On information and belief, Microsoft knows that the customers and/or users of the Accused Products and Services infringe one or more claims of the Asserted Patents when those customers and/or users make, use, sell, offer to sell, and/or import into the United States, the Accused Products and Services. In addition, Microsoft has failed to redesign the Accused Products and Services to cease infringement.

21. Microsoft indirectly infringes one or more claims of the Asserted Patents by contributory infringement under 35 U.S.C. § 271(c). Microsoft has contributed to and continues to contribute to the direct infringement of one or more claims of the Asserted Patents by customers and/or users of the Accused Products and Services. Upon information and belief, Microsoft knew of the Asserted Patents. Upon information and belief, Microsoft has sold, offered to sell, and/or

McKool Smith Hennigan, P.C.
255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065

imported in and into the United States the Accused Products, which Microsoft has known to be especially made or adapted for use in infringing the Asserted Patents and which have no substantial non-infringing uses. Upon information and belief, Microsoft designed the Accused Products and Services such that they would infringe one or more claims of the Asserted Patents if made, used, sold, offered for sale, or imported into the United States. The Accused Products and Services have no substantial use that does not infringe one or more claims of the Asserted Patents.

22. Microsoft's acts of direct, contributory, and induced infringement have caused damage to MRT, and MRT is entitled to recover damages sustained as a result of Microsoft's wrongful acts. MRT has been irreparably harmed by Microsoft's acts of infringement, and will continue to be harmed unless and until Microsoft's acts of infringement are enjoined and restrained by order of this Court. MRT has no adequate remedy at law to redress Microsoft's continuing acts of infringement. The hardships that would be imposed upon Microsoft by an injunction are less than those faced by MRT should an injunction not issue. Furthermore, the public interest would be served by issuance of an injunction. As a result of Microsoft's acts of infringement, MRT has suffered and will continue to suffer damages in an amount to be proved at trial.

23. Upon information and belief, Microsoft has known about each of the Asserted Patents. Moreover, Microsoft lacks justifiable belief that there is no infringement, or that the infringed claims are invalid, and has acted with objective recklessness in its infringing activity. Microsoft's infringement is willful, and MRT is entitled to an award of exemplary damages, attorneys' fees, and costs in bringing this action.

DEMAND FOR A JURY TRIAL

24. Pursuant to the provisions of Rule 38(b) of the Federal Rules of Civil Procedure and in accordance with Civil Local Rule 3-6, MRT demands a trial by jury of all issues so triable in this matter.

McKool Smith Hennigan, P.C.
255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065

McKool Smith Hennigan, P.C.
255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065

PRAYER FOR RELIEF

WHEREFORE, MRT requests the following relief:

A. A judgment that the Microsoft has directly infringed, and/or indirectly infringed by way of inducement and/or contributory infringement, the '002 patent;

B. A judgment that the Microsoft has directly infringed, and/or indirectly infringed by way of inducement and/or contributory infringement, the '033 patent;

C. A judgment that the Microsoft has directly infringed, and/or indirectly infringed by way of inducement and/or contributory infringement, the '964 patent;

D. A judgment that the Microsoft has directly infringed, and/or indirectly infringed by way of inducement and/or contributory infringement, the '263 patent;

E. A judgment and order that Microsoft and its parents, affiliates, subsidiaries, officers, agents, servants, employees, attorneys, successors, and assigns, and all those persons in active concert or participation with them, or any of them, be enjoined from making, using, importing, exporting, distributing, supplying, offering for sale, selling, or causing to be sold any product or service falling within the scope of any claim of the Asserted Patents, or otherwise infringing or contributing to or inducing infringement of any claim thereof;

F. The Court order an accounting for damages through verdict and thereafter until Microsoft is enjoined from further infringing activities;

G. A judgment and order that MRT be awarded its actual damages under 35 U.S.C. § 284 (but in no event less than a reasonable royalty), including supplemental damages for any continuing post-verdict infringement until Microsoft is enjoined from further infringing activities;

H. A judgment and order requiring Microsoft to pay MRT pre-judgment and post-judgment interest on the damages awarded, including an award of pre-judgment interest,

pursuant to 35 U.S.C. § 284, from the date of each act of infringement of the Asserted Patents by Microsoft to the day a damages judgment is entered, and further award of post-judgment interest, pursuant to 28 U.S.C. § 1961, continuing until such judgment is paid, at the maximum rate allowed by law;

I. A judgment and order finding this to be an exceptional case and requiring Microsoft to pay the costs of this action (including all disbursements) and attorneys' fees as provided by 35 U.S.C. § 285;

J. A judgment and order finding that Microsoft's infringement is willful and deliberate, entitling MRT to enhanced damages pursuant to 35 U.S.C. § 284;

K. In the event an injunction is not awarded, that the Court award a compulsory future royalty; and

L. That MRT be awarded such other and further relief as the Court deems just and proper.

DATED: April 25, 2013

MCKOOL SMITH HENNIGAN, P.C.

By /S/ Courtland L. Reichman
Courtland L. Reichman

Attorney for Plaintiff,
Media Rights Technologies, Inc.

Courtland L. Reichman (SBN 268873)
MCKOOL SMITH HENNIGAN, P.C.
255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065
Telephone: (650) 394-1400
Facsimile: (650) 394-1422

Christopher Bovenkamp
(Pro Hac Vice application to be filed)
McKOOL SMITH, P.C.
300 Crescent Court
Suite 1500

McKool Smith Hennigan, P.C.
255 Shoreline Drive, Suite 510
Redwood Shores, CA 94065

Dallas, TX 75201
TEL (214) 978-4940
FAX: (214) 978-4044
cbovenkamp@mckoolsmith.com

Jeanne E. Irving (SBN 81963)
McKOOL SMITH, P.C.
865 South Figueroa St.
Suite 2900
Los Angeles, CA 90017
TEL 213.694.1015
FAX 213.694.1234
jirving@mckoolsmithhenningan.com

Attorneys for Plaintiff
Media Rights Technologies, Inc.

EXHIBIT A

US007578002B2

(12) United States Patent

Risan et al.

(10) Patent No.: US 7,578,002 B2
(45) Date of Patent: *Aug. 18, 2009

(54) **CONTROLLING INTERACTION OF DELIVERABLE ELECTRONIC MEDIA**

(75) Inventors: **Hank Risan**, Santa Cruz, CA (US); **Edward Vincent Fitzgerald**, Santa Cruz, CA (US)

(73) Assignee: **Trimble Navigation Limited**, Sunnyvale, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 591 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/304,390**

(22) Filed: **Nov. 25, 2002**

(65) **Prior Publication Data**

US 2004/0103297 A1 May 27, 2004

(51) **Int. Cl.**
H03M 1/66 (2006.01)

(52) **U.S. Cl.** **726/32**

(58) **Field of Classification Search** ..... None
See application file for complete search history.

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"California Software Labs Multi Monitor Display and Video Mini Port Driver Development", http://www.cswl.com/whitepapers/multi-monitor-display.html, (Oct. 2005), 1-9.

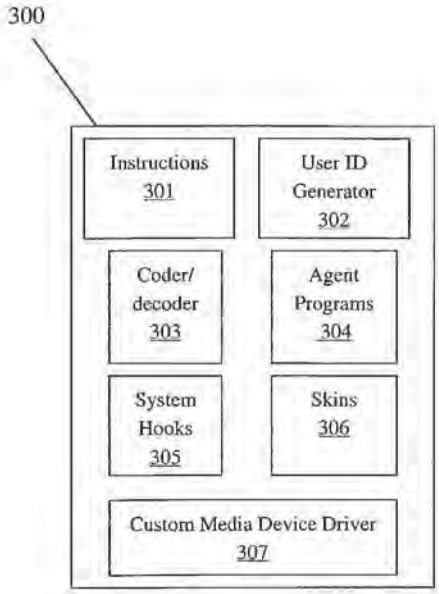
* cited by examiner

Primary Examiner—Matthew B Smithers
Assistant Examiner—David J Pearson

(57) **ABSTRACT**

A method of restricting client interaction of deliverable electronic media. In one embodiment, the method is comprised of detecting a media player application operable within a computer system. The media player application enables the computer system to present contents of a media file. The present method is further comprised of governing within said media player application a function that enables non-compliance with a usage restriction applicable to the media file. The present method is further comprised of controlling output of the media file. The controlling is performed by a compliance mechanism coupled to the computer system. The compliance mechanism is for enabling compliance with the usage restriction applicable to the media file.

32 Claims, 8 Drawing Sheets



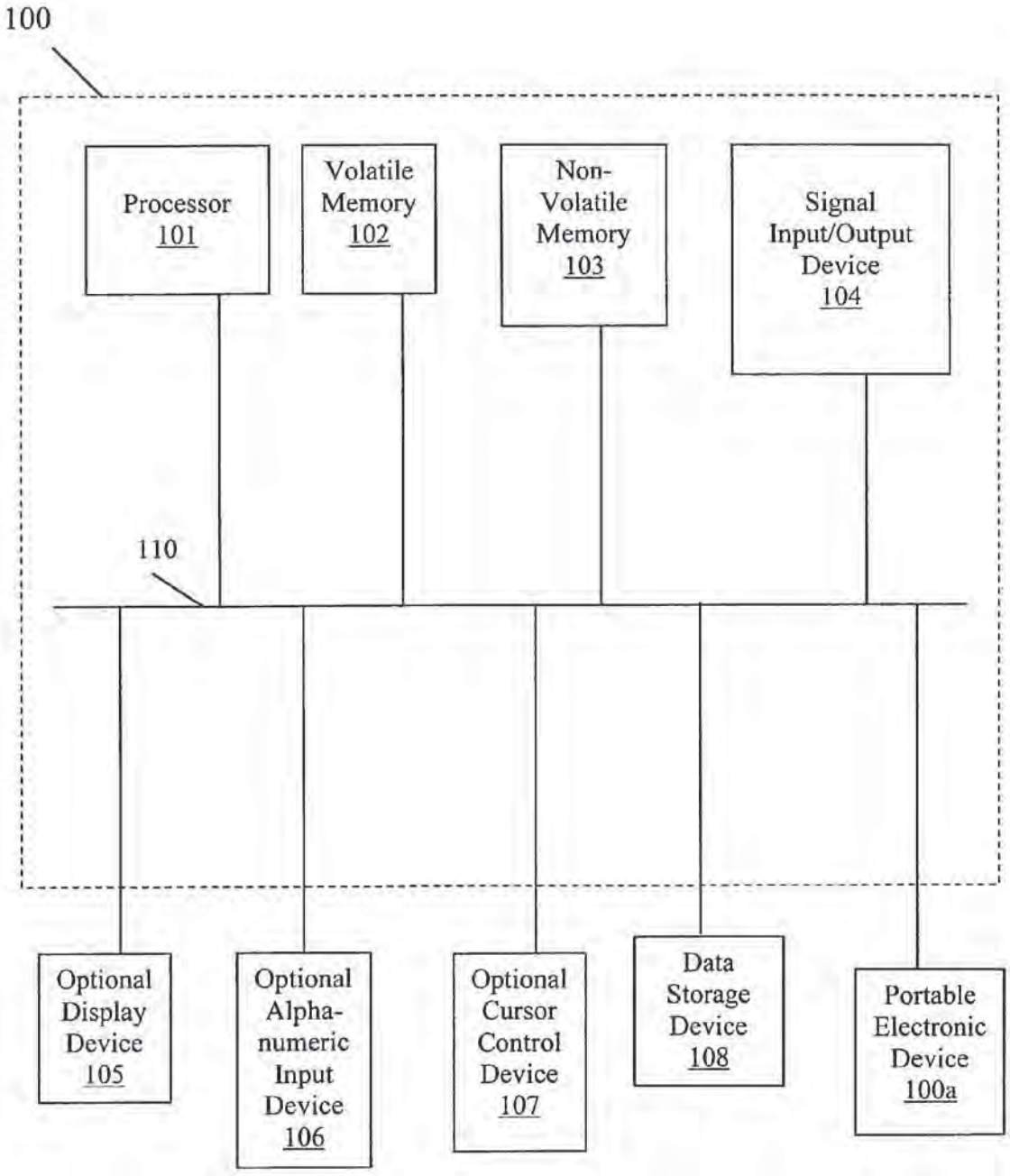

100
Processor
101
Volatile
Memory
102
Non-
Volatile
Memory
103
Signal
Input/Output
Device
104
110
Optional
Display
Device
105
Optional
Alpha-
numeric
Input
Device
106
Optional
Cursor
Control
Device
107
Data
Storage
Device
108
Portable
Electronic
Device
100a

FIGURE 1

200

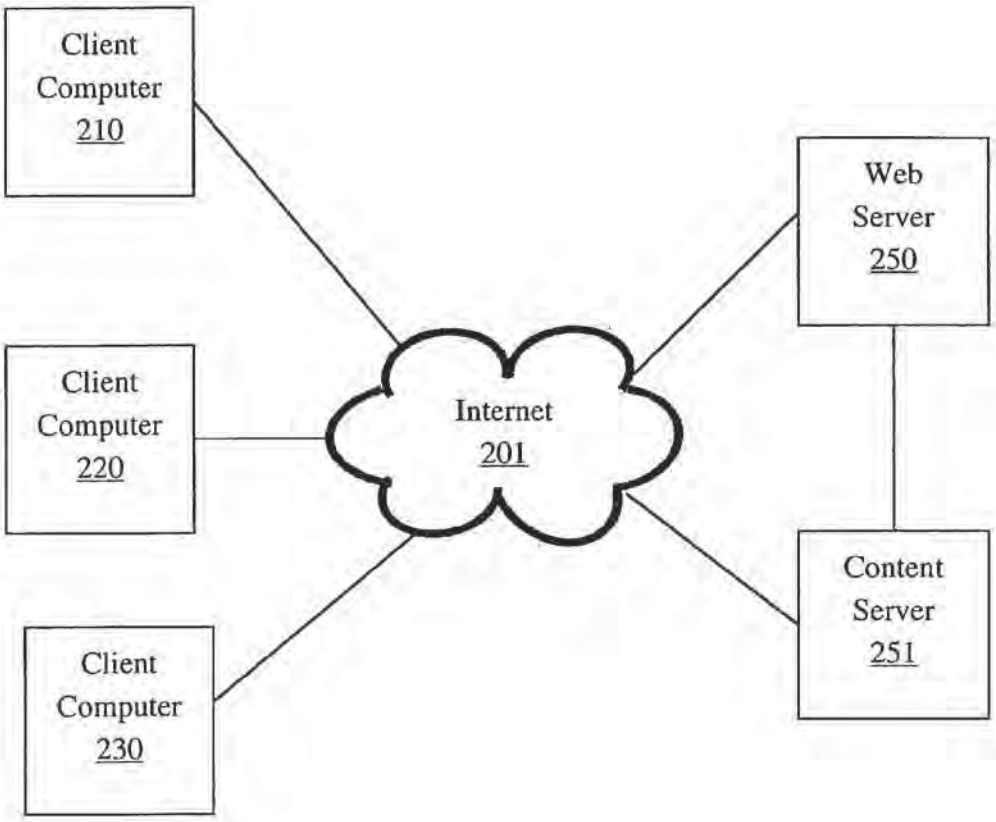

Client Computer 210
Client Computer 220
Client Computer 230
Internet 201
Web Server 250
Content Server 251

FIGURE 2

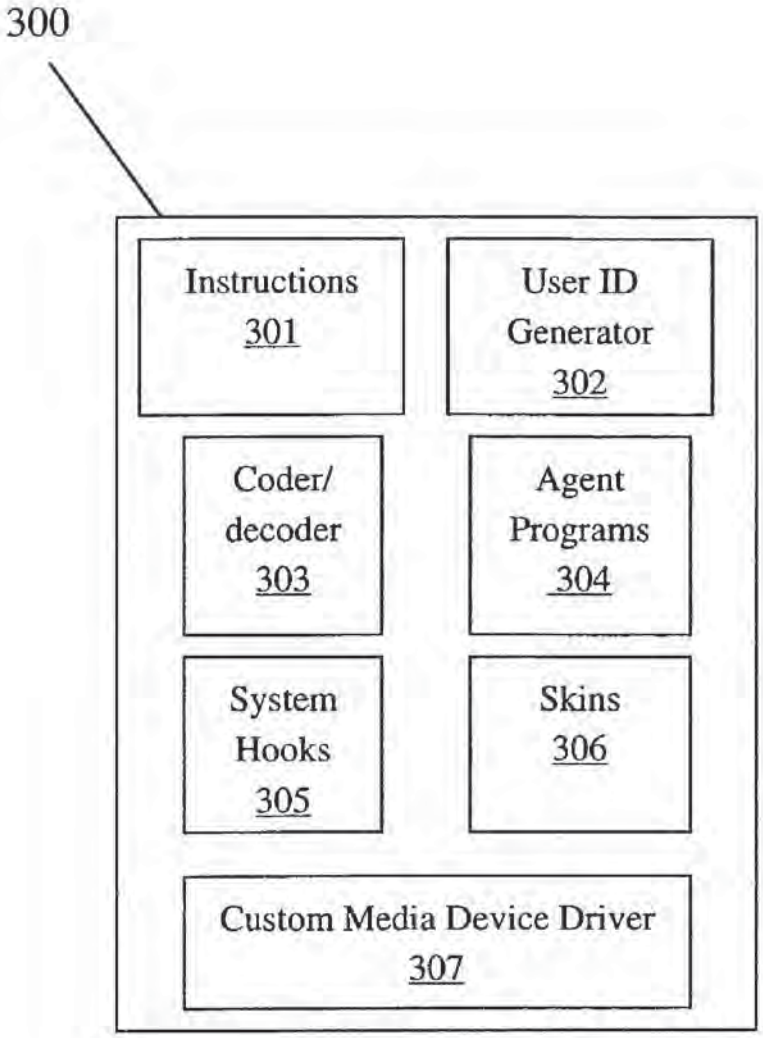

300
Instructions
301
User ID
Generator
302
Coder/
decoder
303
Agent
Programs
304
System
Hooks
305
Skins
306
Custom Media Device Driver
307

FIGURE 3

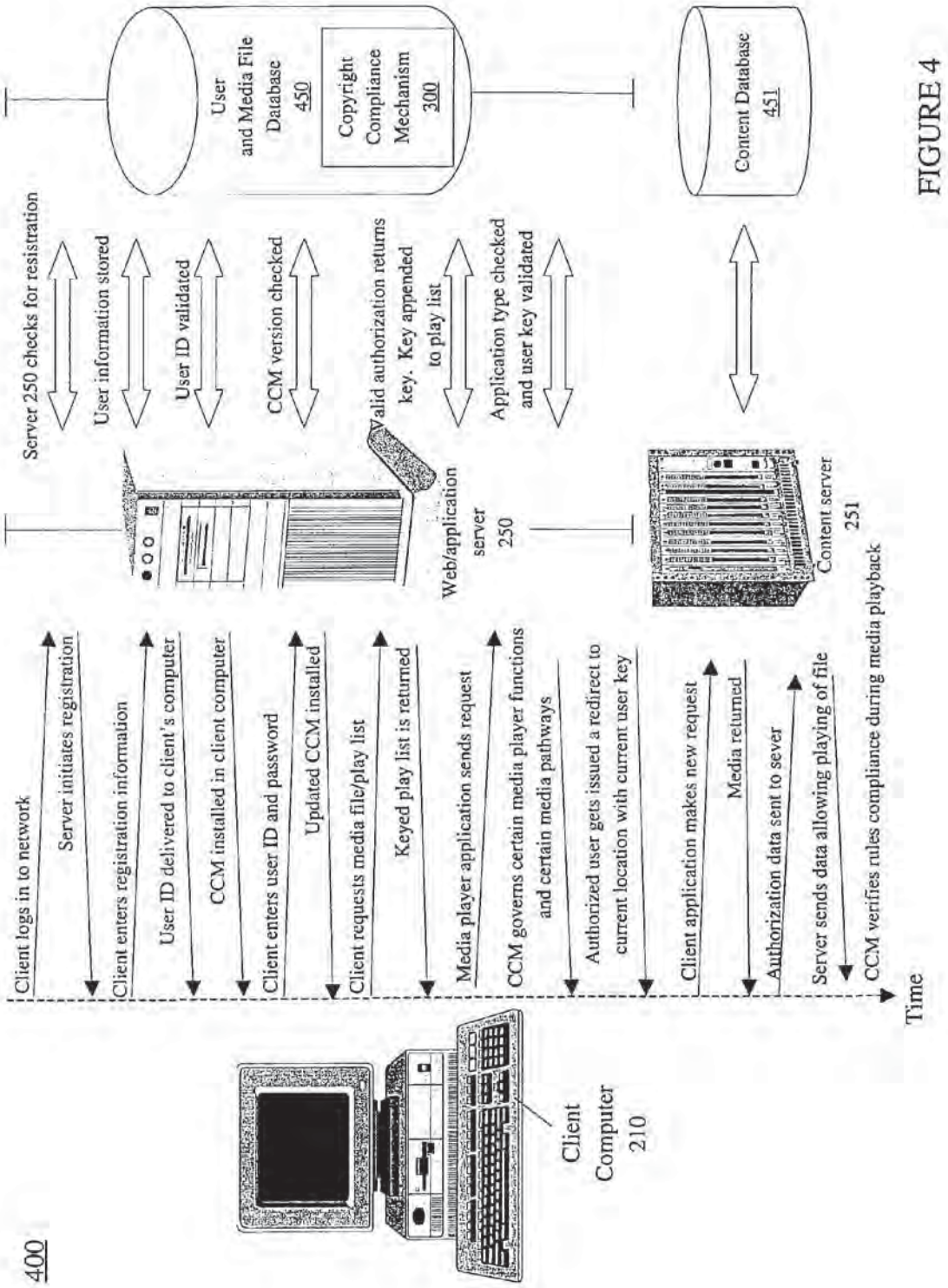

400
Client Computer 210
Time
Client logs in to network
Server initiates registration
Client enters registration information
User ID delivered to client's computer
CCM installed in client computer
Client enters user ID and password
Updated CCM installed
Client requests media file/play list
Keyed play list is returned
Media player application sends request
CCM governs certain media player functions and certain media pathways
Authorized user gets issued a redirect to current location with current user key
Client application makes new request
Media returned
Authorization data sent to sever
Server sends data allowing playing of file
CCM verifies rules compliance during media playback
Web/application server 250
Content server 251
Server 250 checks for resistration
User information stored
User ID validated
CCM version checked
Valid authorization returns key. Key appended to play list
Application type checked and user key validated
User and Media File Database 450
Copyright Compliance Mechanism 300
Content Database 451

FIGURE 4

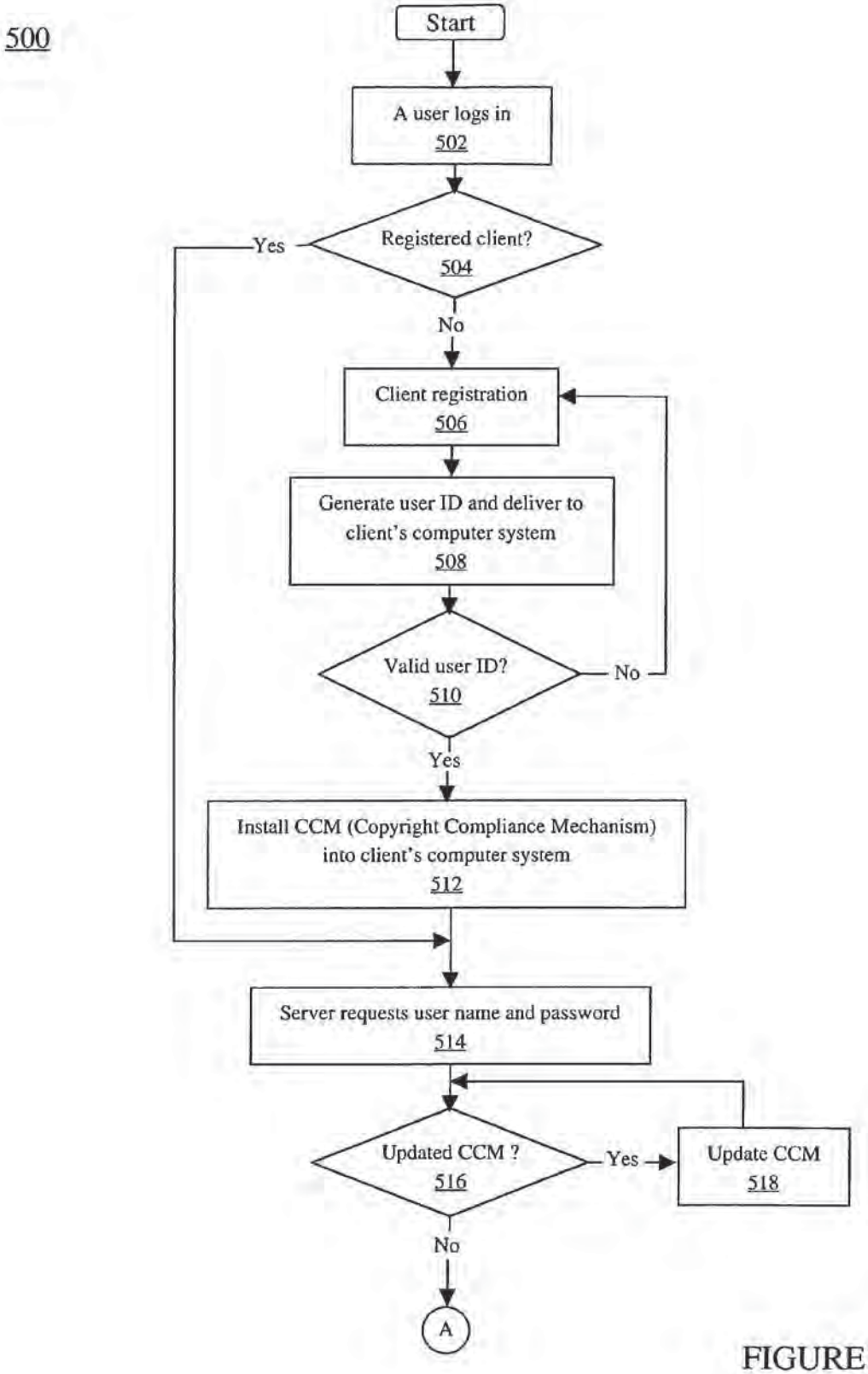

500
Start
A user logs in
502
Registered client?
504
Yes
No
Client registration
506
Generate user ID and deliver to client's computer system
508
Valid user ID?
510
No
Yes
Install CCM (Copyright Compliance Mechanism) into client's computer system
512
Server requests user name and password
514
Updated CCM ?
516
Yes
Update CCM
518
No
A

FIGURE 5A

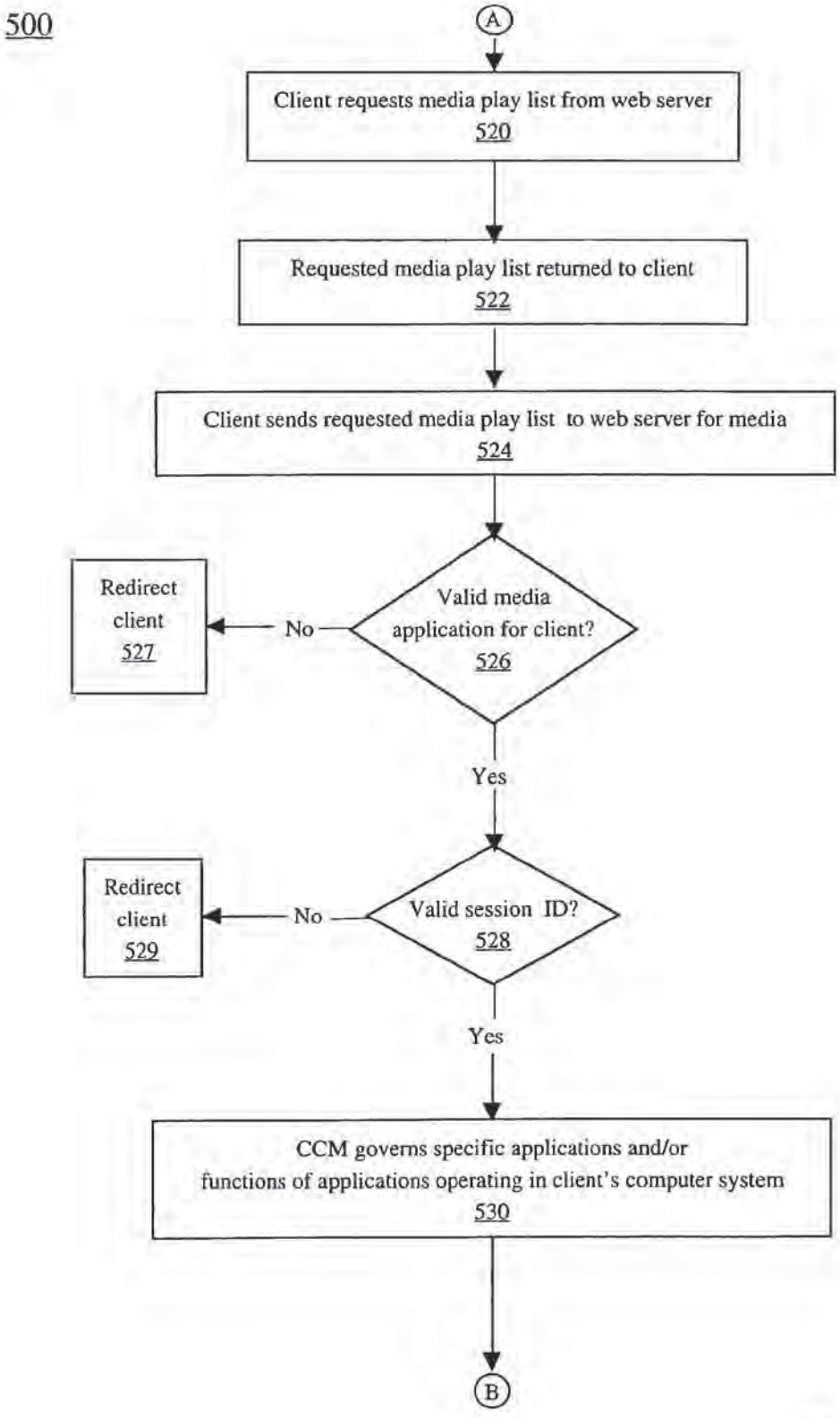

500
A
Client requests media play list from web server
520
Requested media play list returned to client
522
Client sends requested media play list to web server for media
524
Valid media application for client?
526
No
Redirect client
527
Yes
Valid session ID?
528
No
Redirect client
529
Yes
CCM governs specific applications and/or functions of applications operating in client's computer system
530
B

FIGURE 5B

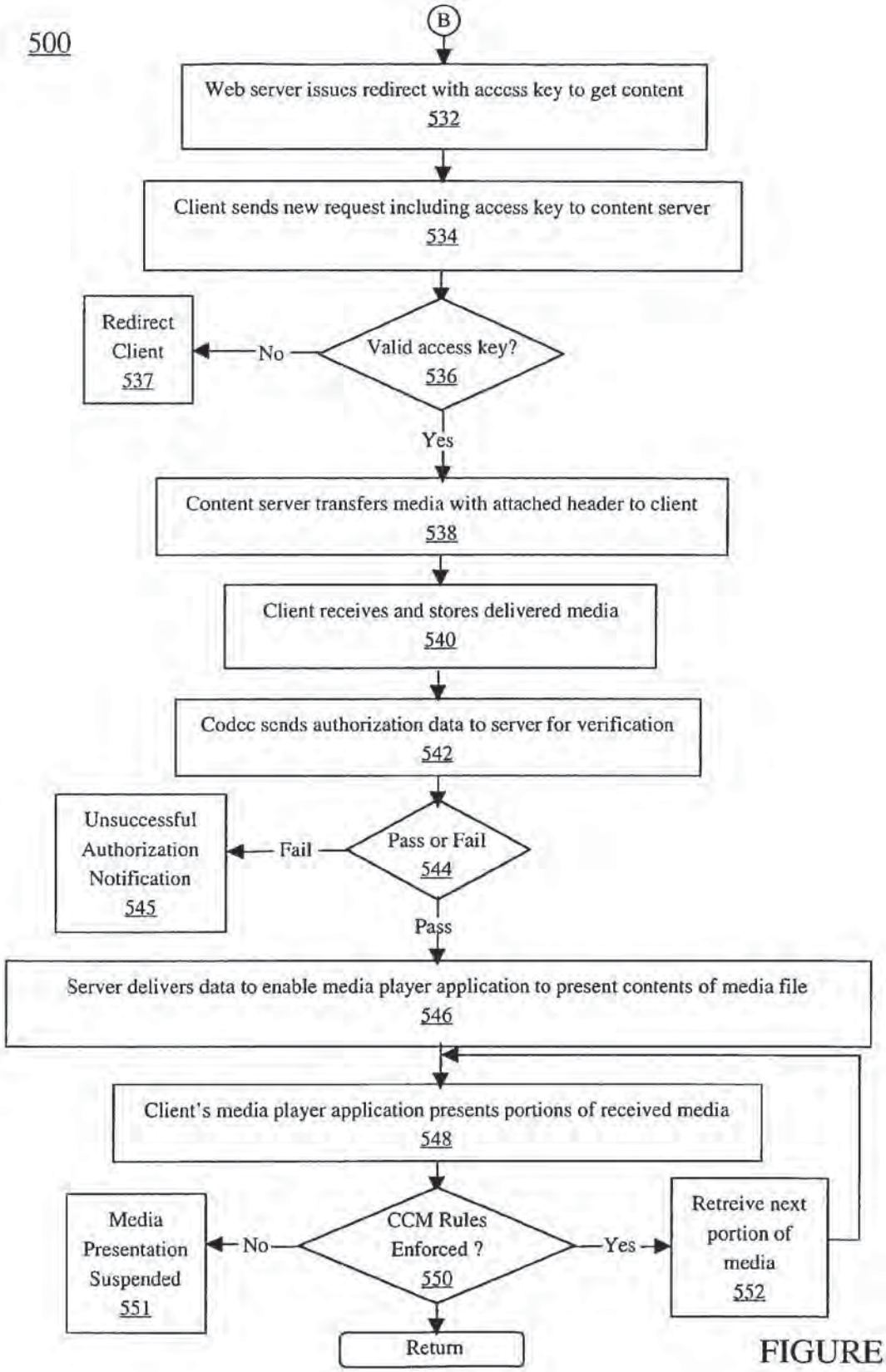
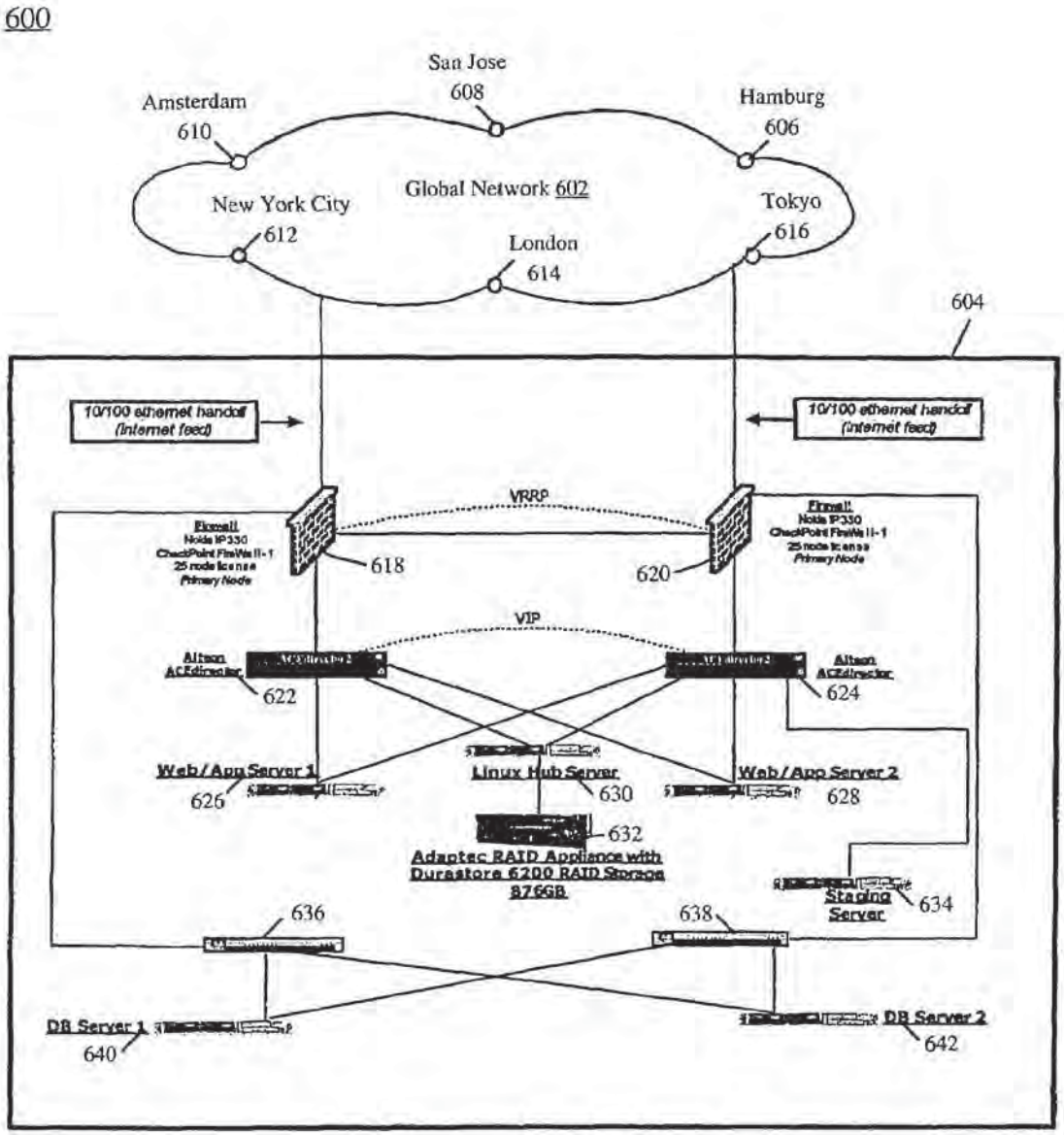

500
B
Web server issues redirect with access key to get content
532
Client sends new request including access key to content server
534
Redirect Client
537
No
Valid access key?
536
Yes
Content server transfers media with attached header to client
538
Client receives and stores delivered media
540
Codec sends authorization data to server for verification
542
Unsuccessful Authorization Notification
545
Fail
Pass or Fail
544
Pass
Server delivers data to enable media player application to present contents of media file
546
Client's media player application presents portions of received media
548
Media Presentation Suspended
551
No
CCM Rules Enforced ?
550
Yes
Retreive next portion of media
552
Return

FIGURE 5C


600
San Jose
608
Amsterdam
610
Hamburg
606
Global Network 602
New York City
612
Tokyo
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London
614
604
10/100 ethernet handoff (Internet feed)
10/100 ethernet handoff (Internet feed)
VRRP
618
620
VIP
Alteon ACEdirector
622
624
Web/App Server 1
626
Linux Hub Server
630
Web/App Server 2
628
632
Adaptec RAID Appliance with Durastore 6200 RAID Storage 876GB
Staging Server
634
636
638
DB Server 1
640
DB Server 2
642

FIGURE 6

CONTROLLING INTERACTION OF DELIVERABLE ELECTRONIC MEDIA

CROSS REFERENCE TO RELATED APPLICATIONS

This application is cross referenced with co-pending U.S. patent application Ser. No. 10/235,293, entitled "SYSTEM AND METHOD FOR PROVIDING GLOBAL MEDIA CONTENT DELIVERY" by Hank Risan, et al., filed Sep. 4, 2002, assigned to the assignee of the present invention, and which is hereby incorporated by reference.

FIELD OF THE INVENTION

The present invention relates to electronic media. More particularly, the present invention relates to restricting interaction of delivered electronic media.

BACKGROUND OF THE INVENTION

With advancements in hardware and software technology, computers are integral tools utilized in various applications, such as finance, CAD (computer aided design), manufacturing, health care, telecommunication, education, etc. Further, an enhancement in computer functionality can be realized by communicatively coupling computers together to form a network. Within a network environment, computer systems enable users to exchange files, share information stored in common databases, combine or pool resources, communicate via electronic mail (e-mail), and access information on the Internet. Additionally, computers connected to a network environment, e.g., the Internet, provide their users access to data and information from all over the world.

Some of the various types of data that a user can access and share include, but are not limited to, text data such as that found in a word document, graphical data such as that found in pictures, e.g., JPEGs, GIFs, TIFFs, audio data such as that found in music files, e.g., MP3 files, and video data such as that found in moving pictures files, e.g., MPEG, MOV, and AVI files, to name a few. In fact, nearly any type of data can be stored and shared with other computer systems. In many instances, the material contained within the various data types is copyrighted material.

There are many different types of network environments that can be implemented to facilitate sharing of data between computer systems. Some of the various network environment types include Ethernet, client-server, and wired and/or wireless network environments. A common utilization of a network environment type is for file sharing, such as in a P2P network or point-to-point network. Most P2P networks rely on business models based upon the transfer and redistribution of copyrighted material, e.g., audio files, between computers coupled to a network, e.g., the Internet. A P2P network allows a user to acquire the copyrighted material from a computer, a web site source, or a music broadcaster, and store and share the material with other users throughout the network, in some instances acting as a web site source or a music broadcaster.

It is also common for users sharing files in an uncontrolled manner to use freely distributed or commercially available media player applications to experience, e.g., listen, view, and/or watch, the shared files. In many instances, these media player applications also provide for downloading the media file from a P2P network or from licensed web broadcasters, saving it locally, and then upload the media file onto an unlawful P2P or similar network and/or consumer recording

devices. Unlawfully saving a media file can be as simple as selecting the save or record function on a media player application.

Additionally, many of the computers, web sites, and web broadcasters that share copyrighted material commonly do not control or monitor the files being exchanged between computers. Additionally, when web sites attempt to control or restrict the distribution of copyrighted material, e.g., audio files, users seeking to circumvent controls or restrictions can, in many cases, simply utilize the recording functionality of a media player application and save the copyrighted material, rename the particular audio file, and upload the renamed file, rendering attempts to control or restrict its distribution moot.

A disadvantage to the uncontrolled sharing of files, more particularly the downloading, saving, and uploading of copyrighted material, e.g., music files, is that there is currently no effective means to provide compensation to the owner (e.g., record company, lyricist, musician, etc.) of the copyrighted material. Studies have revenue losses in the billions due to unauthorized copying and inaccurate reporting of royalties.

Current methods of sharing music files do not provide adequate file distribution controls or proper accountability with regard to licensing agreements and/or copyright restrictions associated with shared copyrighted material.

SUMMARY OF THE INVENTION

Accordingly, a need exists for a method that provides control of the distribution of media content shared through a network environment, e.g., the Internet. Further, a need exists for a method that provides compliance with copyright restrictions and/or licensing agreements associated with the media content being shared. Embodiments of the present invention satisfy the above mentioned needs.

In one embodiment, the present invention provides a method of controlling interaction of deliverable electronic media that is comprised of detecting a media player application operable within a computer system. The media player application enables the computer system to present contents of a media file. The present method is further comprised of governing within the media player application a function that enables non-compliance with a usage restriction applicable to the media file. The present method is further comprised of controlling the output of the media file. The controlling is performed by a compliance mechanism coupled to the computer system. The compliance mechanism is for enabling compliance with the usage restriction applicable to the media file.

In another embodiment, the present invention provides computer implementable instructions stored on a computer readable medium, the instructions for causing a compliance mechanism to perform a method of controlling client interaction of a media file. The method is comprised of discovering a media player application operable within a client computer system. The media player application is for presenting contents of a media file deliverable to the client computer system. The present method is further comprised of regulating a function of the media player application that does not comply with usage restrictions applicable to the media file. The present method further includes controlling output of the media file. The compliance mechanism performs the controlling and also enables compliance with the usage restriction.

In another embodiment, the present invention provides a method for media file usage restriction compliance comprising means for detecting a media player application operable on a client computer system and for presenting contents of a media file. The present method further comprises means for

governing a function of said media player application that does not comply with a usage restriction applicable to a media file. The present method further includes means for controlling output of the media file. A compliance mechanism coupled to the client computer system performs the restricting and also enables compliance with the usage restriction applicable to the media file.

These and other objects and advantages of the present invention will no doubt become obvious to those of ordinary skill in the art after having read the following detailed description of the preferred embodiments which are illustrated in the various drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and form a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

FIG. **1** is a block diagram of an exemplary computer system that can be utilized in accordance with an embodiment of the present invention.

FIG. **2** is a block diagram of an exemplary network environment that can be utilized in accordance with an embodiment of the present invention.

FIG. **3** is a block diagram of various exemplary functional components of a copyright compliance mechanism in accordance with an embodiment of the present invention.

FIG. **4** is an illustration of an exemplary system for implementing a copyright compliance mechanism in accordance with an embodiment of the present invention.

FIGS. **5**A, **5**B, and **5**C are a flowchart of steps performed in accordance with an embodiment of the present invention for providing a copyright compliance mechanism to a network of client and server computer systems.

FIG. **6** is a diagram of an exemplary global media delivery system in which a copyright compliance mechanism can be implemented in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION

Reference will now be made in detail to embodiments of the invention, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with embodiments, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternatives, modifications, and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims. Furthermore, in the following detailed description of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, to one of ordinary skill in the art, the present invention may be practiced without these specific details. In other instances, well known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of the present invention.

Some portions of the detailed description which follows are presented in terms of procedures, logic blocks, processing, and other symbolic representations of operations on data bits within a computing system or digital memory system. These descriptions and representations are the means used by those skilled in the data processing art to most effectively convey the substance of their work to others skilled in the art. A procedure, logic block, process, etc., is herein, and generally, conceived to be a self-consistent sequence of steps or instructions leading to a desired result. The steps are those involving physical manipulations of physical quantities. Usually, though not necessarily, these physical manipulations take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated in a computing system or similar electronic computing device. For reasons of convenience, and with reference to common usage, these signals are referred to as bits, values, elements, symbols, characters, terms, numbers, or the like, with reference to the present invention.

It should be borne in mind, however, that all of these terms are to be interpreted as referencing physical manipulations and quantities and are merely convenient labels and are to be interpreted further in view of terms commonly used in the art. Unless specifically stated otherwise as apparent from the following discussions, it is understood that discussions of the present invention refer to actions and processes of a computing system, or similar electronic computing device that manipulates and transforms data. The data is represented as physical (electronic) quantities within the computing system's registers and memories and is transformed into other data similarly represented as physical quantities within the computing system's memories or registers, or other such information storage, transmission, or display devices.

In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. To one skilled in the art, the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to avoid obscuring the present invention.

Embodiments of the present invention are discussed primarily in the context of a network of computer systems such as a network of desktop, workstation, laptop, handheld, and/or other portable electronic device. For purposes of the present application, the term "portable electronic device" is not intended to be limited solely to conventional handheld or portable computers.

Instead, the term "portable electronic device" is also intended to include many mobile electronic devices. Such mobile devices include, but are not limited to, portable CD players, MP3 players, mobile phones, portable recording devices, and other personal digital devices.

FIG. **1** is a block diagram illustrating an exemplary computer system **100** that can be used in accordance with an embodiment of the present invention. It is noted that computer system **100** can be nearly any type of computing system or electronic computing device including, but not limited to, a server computer, a desktop computer, a laptop computer, or other portable electronic device. Within the context of the present invention, certain discussed processes, procedures, and steps are realized as a series of instructions (e.g., a software program) that reside within computer system memory units of computer system **100** and which are executed by a processor(s) of computer system **100**, in one embodiment. When executed, the instructions cause computer system **100** to perform specific actions and exhibit specific behavior which is described in detail herein.

Computer system **100** of FIG. **1** comprises an address/data bus **110** for communicating information, one or more central processors **101** coupled to bus **110** for processing information and instructions. Central processor(s) **101** can be a microprocessor or any alternative type of processor. Computer system **100** also includes a computer usable volatile memory **102**, e.g., random access memory (RAM), static RAM (SRAM), dynamic RAM (DRAM), synchronous dynamic RAM

(SDRAM), double data rate RAM (DDR RAM), etc., coupled to bus **110** for storing information and instructions for processor(s) **101**. Computer system **100** further includes a computer usable non-volatile memory **103**, e.g., read only memory (ROM), programmable ROM, electronically programmable ROM (EPROM), electrically erasable ROM (EEPROM), flash memory (a type of EEPROM), etc., coupled to bus **110** for storing static information and instructions for processor(s) **101**. In one embodiment, non-volatile memory **103** can be removable.

System **100** also includes one or more signal generating and receiving devices, e.g., signal input/output device(s) **104** coupled to bus **110** for enabling computer **100** to interface with other electronic devices. Communication interface **104** can include wired and/or wireless communication functionality. For example, in one embodiment, communication interface **104** is a serial communication port, but can alternatively be one of a number of well known communication standards and protocols, e.g., a parallel port, an Ethernet adapter, a FireWire (IEEE 1394) interface, a Universal Serial Bus (USB), a small computer system interface (SCSI), an infrared (IR) communication port, a Bluetooth wireless communication adapter, a broadband connection, and the like. In another embodiment, a digital subscriber line (DSL) can be implemented as signal input/output device **104**. In such an instance, communication interface **104** may include a DSL modem.

Computer **100** of FIG. **1** can also include one or more computer usable data storage device(s) **108** coupled to bus **110** for storing instructions and information, in one embodiment of the present invention. In one embodiment, data storage device **108** can be a magnetic storage device, e.g., a hard disk drive, a floppy disk drive, a zip drive, or other magnetic storage device. In another embodiment, data storage device **108** can be an optical storage device, e.g., a CD (compact disc), a DVD (digital versatile disc), or other alternative optical storage device. Alternatively, any combination of magnetic, optical, and alternative storage devices can be implemented, e.g., a RAID (random array of independent disks) configuration. It is noted that data storage device **108** can be located internal and/or external of system **100** and communicatively coupled with system **100** utilizing wired and/or wireless communication technology, thereby providing expanded storage and functionality to system **100**. It is further noted that nearly any portable electronic device, e.g., device **100***a*, can also be communicatively coupled with system **100** via utilization of wired and/or wireless technology, thereby expanding the functionality of system **100**.

System **100** can also include an optional display device **105** coupled to bus **110** for displaying video, graphics, and/or alphanumeric characters. It is noted that display device **105** can be a CRT (cathode ray tube), a thin CRT (TCRT), a liquid crystal display (LCD), a plasma display, a field emission display (FED) or any other display device suitable for displaying video, graphics, and alphanumeric characters recognizable to a user.

Computer system **100** of FIG. **1** further includes an optional alphanumeric input device **106** coupled to bus **110** for communicating information and command selections to processor(s) **101**, in one embodiment. Alphanumeric input device **106** is coupled to bus **110** and includes alphanumeric and function keys. Also included in computer **100** is an optional cursor control device **107** coupled to bus **110** for communicating user input information and command selections to processor(s) **101**. Cursor control device **107** can be implemented using a number of well known devices such as a mouse, a trackball, a track pad, a joy stick, a optical tracking device, a touch screen, etc. It is noted that a cursor can be directed and/or activated via input from alphanumeric input device **106** using special keys and key sequence commands. It is further noted that directing and/or activating the cursor can be accomplished by alternative means, e.g., voice activated commands, provided computer system **100** is configured with such functionality.

FIG. **2** is a block diagram of an exemplary network **200** in which embodiments of the present invention may be implemented. In one example, network **200** enables one or more authorized client computer systems (e.g., **210**, **220**, and **230**), each of which are coupled to Internet **201**, to receive media content from a media content server, e.g., **251**, via the Internet **201** while preventing unauthorized client computer systems from accessing media stored in a database of content server **251**.

Network **200** includes a web server **250** and a content server **251** which are communicatively coupled to Internet **201**. Further, web server **250** and content server **251** can be communicatively coupled without utilizing Internet **201**, as shown. Web server **250**, content server **251**, and client computers **210**, **220**, and **230** can communicate with each other. It is noted that computers and servers of network **200** are well suited to be communicatively coupled in various implementations. For example, web server **250**, content server **251**, and client computer systems **210**, **220**, and **230** of network **200** can be communicatively coupled via wired communication technology, e.g., twisted pair cabling, fiber optics, coaxial cable, etc., or wireless communication technology, or a combination of wired and wireless communication technology.

Still referring to FIG. **2**, it is noted that web server **250**, content server **251**, and client computer systems **210**, **220** and **230** of network **200** can, in one embodiment, be each implemented in a manner similar to computer system **100** of FIG. **1**. However, the server and computer systems in network **200** are not limited to such implementation. Additionally, web server **250** and content server **251** can perform various functionalities within network **200**. It is also noted that, in one embodiment, web server **250** and content server **251** can both be disposed on a single or a plurality of physical computer systems, e.g., computer system **100** of FIG. **1**.

Further, it is noted that network **200** can operate with and deliver any type of media content, (e.g., audio, video, multimedia, graphics, information, data, software programs, etc.) in any format. In one example, content server **251** can provide audio and video files to client computers **210**-**230** via Internet **201**.

FIG. **3** is a block diagram of an exemplary copyright compliance mechanism (CCM) **300**, for controlling distribution of, access to, and/or copyright compliance of media files, in accordance with an embodiment of the present invention. In one embodiment, CCM **300** contains one or more software components and instructions for enabling compliance with DMCA (digital millennium copyright act) restrictions and/or RIAA (recording industry association of America) licensing agreements regarding media files.

There are currently two types of copyright licenses recognized by the DMCA for the protection of broadcasted copyrighted material. One of the broadcast copyright licenses is a compulsory license, also referred to as a statutory license. A statutory license is defined as a non-interactive license, meaning the user cannot select the song. Further, a caveat of this type of broadcast license is that a user must not be able to select a particular music file for the purpose of recording it to the user's computer system or other storage device. Another caveat of a statutory license is that a media file is not available more than once for a given period of time. In one example, the period of time can be three hours.

The other type of the broadcast license recognized by the DMCA is an interactive licensing agreement. An interactive licensing agreement is commonly with the copyright holder, e.g., a record company, the artist, where the copyright holder grants permission for a server, e.g., web server **250** and/or content server **251** of FIG. **2** to broadcast copyrighted material. Under an interactive licensing agreement, there are a variety of ways that copyrighted material, e.g., music files, can be broadcast. For example, one manner in which music files can be broadcast is to allow the user to select and listen to a particular sound recording, but without the user enabled to make a sound recording. This is commonly referred to as an interactive with "no save" license, meaning that the end user is unable to save or store the media content file in a relatively permanent manner. Additionally, another manner in which music files can be broadcast is to allow a user to not only select and listen to a particular music file, but additionally allow the user to save that particularly music file to disc and/or burn the music file to CD, MP3 player, or other portable electronic device. This is commonly referred to as an interactive with "save" license, meaning that the end user is enabled to save, store, or burn to CD, the media content file.

It is noted that the DMCA allows for the "perfect" reproduction of the sound recording. A perfect copy of a sound recording is a one-to-one mapping of the original sound recording into a digitized form, such that the perfect copy is virtually indistinguishable and/or has no audible differences from the original recording.

In one embodiment, CCM (copyright compliance mechanism) **300** can be stored in web server **250** and/or content server **251** of network **200** and which is configured to be installed into each client computer system, e.g., **210**, **220** and **230**, that is enabled to access the media files stored within content server **251** and/or web server **250**. Alternatively, copyright compliance mechanism **300** can be, in another embodiment, externally disposed and communicatively coupled with a client computer system, e.g., system **210**. In one embodiment, portions of components, entire components and/or combinations of components of CCM **300** can be readily updated, e.g., via Internet **201**, to reflect changes or developments in the DMCA, changes or developments in copyright restrictions and/or licensing agreements that pertain to any media file, changes in current media player applications and/or the development of new media player applications.

Referring to FIG. **3**, in one embodiment, CCM **300** is shown to include instructions **301** for enabling client computer system **210** to interact with web server **250** and content server **251** of network **200**. Instructions **301** enable client computer system **210** to interact with servers, e.g., **250** and **251** in a network, e.g., **200**.

The copyright compliance mechanism **300** also includes, in one embodiment, a user ID generator **302**, for generating a user ID or user key, and one or more cookie(s) which contain (s) information specific to the user and the user's computer system, e.g., **210**. In one embodiment, the user ID and the cookie(s) are installed in computer system **210** prior to installation of the remaining components of the copyright compliance mechanism **300**. It is noted that the presence of a valid cookie(s) and a valid user ID/user key are verified by web server **250** before the remaining components of a CCM **300** can be installed, within one embodiment of the present invention. Additionally, the user ID/user key can contain, but is not limited to, the user's name, the user's address, the user's credit card number, verified email address, and an identity (username) and password selected by the user. Furthermore, the cookie can contain, but is not limited to, information specific to the user, information regarding the user's computer system **210**, e.g., types of media applications operational therewithin, a unique identifier associated with computer system **210**, e.g., a MAC (machine address code) address and/or an IP address, and other information specific to the user and the computer system operated by the user. It is noted that the information regarding the client computer system, e.g., **210**, the user of system **210**, and an access key described herein can be collectively referred to as authorization data.

Advantageously, with information regarding the user and the user's computer system, e.g., **210**, web server **250** can determine when a user of one computer system, e.g., **210**, has given their username and password to another user using another computer system, e.g., **220**. Because the username, password, and the user's computer system **210** are closely associated, web server **250** can prevent unauthorized access to copyrighted media content, in one embodiment. It is noted that if web server **250** detects unauthorized sharing of usernames and passwords, it can block the user of computer system **210**, as well as other users who unlawfully obtained the username and password, from future access to copyrighted media content available through web server **250**. Web server **250** can invoke blocking for any specified period of time, e.g., for a matter of minutes or hours to months, years, or longer.

Still referring to FIG. **3**, copyright compliance mechanism **300** further includes one or more coder/decoders (codec) **303** that, in one embodiment, is/are adapted to perform, but is/are not limited to, encoding/decoding of media files, compressing/decompressing of media files, detecting that delivered media files are encrypted as prescribed by CCM **300**. In the present embodiment, coder/decoder **303** can also extract key fields from a header attached to each media content file for, in part, verification that the file originated from a content server, e.g., **251**. In the present embodiment, coder/decoder **303** can also perform a periodic and repeated check of the media file, while the media file is passed to the media player application, e.g., in a frame by frame basis or in a buffer by buffer basis, to ensure that CCM **300** rules are being enforced at any particular moment during media playback. It is noted that differing coder/decoders **303** can be utilized in conjunction with various types of copyrighted media content including, but not limited to, audio files, video files, graphical files, alphanumeric files and the like, such that any type of media content file can be protected in accordance with embodiments of the present invention.

With reference still to FIG. **3**, copyright compliance mechanism **300** also includes one or more agent programs **304** which are configured to engage in dialogs and negotiate and coordinate transfer of information between a computer system, e.g., **210**, **220**, or **230**, a server, e.g., web server **250** and/or content server **251**, and/or media player applications, with or without recording functionality, that are operable within a client computer system, in one embodiment. In the present embodiment, agent program **304** can also be configured to maintain system state, verify that other components are being utilized simultaneously, to be autonomously functional without knowledge of the client, and can also present messages, e.g., error messages, media information, advertising, etc., via a display window or electronic mail. This enables detection of proper skin implementation and detection of those applications that are running. It is noted that agent programs are well known in the art and can be implemented in a variety of ways in accordance with the present embodiment.

Copyright compliance mechanism **300** also includes one or more system hooks **305**, in one embodiment of the present invention. A system hook **305** is, in one embodiment, a library that is installed in a computer system, e.g., **210**, and intercepts system wide events. For example, a system hook **305**, in conjunction with skins **306**, can govern certain properties and/or functionalities of media player applications operating within the client computer system, e.g., **210**, including, but not limited to, mouse click shortcuts, keyboard shortcuts, standard system accelerators, progress bars, save functions, pause functions, rewind functions, skip track functions, forward track preview, copying to CD, copying to a portable electronic device, and the like.

It is noted that the term govern or governing, for purposes of the present invention, can refer to a disabling, deactivating, enabling, activating, etc., of a property or function. Governing can also refer to an exclusion of that function or property, such that a function or property may be operable but unable to perform in the manner originally intended. For example, during playing of a media file, the progress bar may be selected and moved from one location on the progress line to another without having an effect on the play of the media file.

It is further noted that system hook **305** compares the information for the media player application operating in client computer system, e.g., **210**, with a list of "signatures" associated with known media recording applications. In one embodiment, the signature can be, but is not limited to being, a unique identifier of a media player application and which can consist of the window class of the application along with a product name string which is part of the window title for the application. Advantageously, when new media player applications are developed, their signatures can be readily added to the signature list via an update of CCM **300** described herein.

The following C++ source code is exemplary implementation of the portion of a system hook **305** for performing media player application detection, in accordance with an embodiment of the present invention.

```
int
IsRecorderPresent(TCHAR * szAppClass,
                  TCHAR *   szProdName)
{
    TCHAR  szWndText[_MAX_PATH]; /* buffer to receive
           title string for window */
    HWND   hWnd;      /* handle to target window for operation */
    int    nRetVal;   /* return value for operation */
    /* initialize variables */
    nRetVal = 0;
    if ( _tcscmp(szAppClass,_T("#32770"))
      == 0)
    {
        /* attempt to locate dialog box with specified window title */
        if ( FindWindow((TCHAR *) 32770, szProdName)
          != (HWND) 0)
        {
            /* indicate application found */
            nRetVal = 1;
        }
    }
    else
    {
        /* attempt to locate window with specified class */
        if ( (hWnd = FindWindow(szAppClass, (LPCTSTR) 0))
          != (HWND) 0)
        {
            /* attempt to retrive title string for window */
            if (   GetWindowText(hWnd,
                        szWndText,
                        _MAX_PATH)
                != 0)
            {
                /* attempt to locate product name within title string */
                if ( _tcsstr(szWndText, szProdName)
                  != (TCHAR *) 0)
                {
                    /* indicate application found */
                    nRetVal = 1;
                }
            }
        }
    }
    /* return to caller */
    return nRetVal;
}
```

It is further noted that system hook **305** can also selectively suppress waveform input/output operations to prevent recording of copyrighted media on a client computer system **210**. For example, system hook **305**, subsequent to detection of bundled media player applications operational in a client computer system, e.g., **210**, can stop or disrupt the playing of a media content file. This can be accomplished, in one embodiment, by redirecting and/or diverting certain data pathways that are commonly used for recording, such that the utilized data pathway is governed by a copyright compliance mechanism **300**. This can be performed within a driver shim for a standard Window™ waveform output device, e.g., Windows™ Media Player. Client computer system **210** is configured such that the driver shim will appear as the default waveform audio device to client level application programs. Thus, requests for processing of waveform audio input and/or output will pass through the driver shim prior to being forwarded to the actual waveform audio driver. Such waveform input/output suppression can be triggered by other components of CCM **300**, e.g., agent **304**, to be active when a recording operation is initiated by a client computer system, e.g., **210**, during the play back of media files which are subject to the DMCA. It is noted that alternative driver shims can be implemented for nearly any waveform output device including, but not limited to, a Windows™ Media Player. It is further noted that the driver shim can be implemented for nearly any media in nearly any format including, but not limited to, audio media files and audio input and output devices.

The following C++ source code is an exemplary implementation of the portion of a system hook **305** for diverting and/or redirecting certain data pathways that are commonly used for recording of media content, in accordance with an embodiment of the present invention.

```
DWORD
_stdcall
widMessage(UINT          uDevId,
       UINT              uMsg,
       DWORD         dwUser,
       DWORD         dwParam1,
       DWORD         dwParam2)
{
    BOOL             bSkip;      /* flag indicating operation to be
                     skipped */
    HWND                 hWndMon;   /* handle to main window for
                     monitor */
    DWORD                dwRetVal;  /* return value for operation */
    /* initialize variables */
    bSkip = FALSE;
    dwRetVal = (DWORD) MMSYSERR_NOTSUPPORTED;
    if(uMsg == WIDM_START)
```

-continued

```
{
    /* attempt to locate window for monitor application */
    if ( (hWndMon = FindMonitorWindow( ))
      != (HWND)0)
    {
        /* obtain setting for driver */
        bDrvEnabled = (    SendMessage(hWndMon,
                                       uiRegMsg,
                                       0,
                                       0)
                       == 0)
                    ? FALSE:TRUE;
    }
    if(bDrvEnabled == TRUE)
    {
        /* indicate error in operation */
        dwRetVal = MMSYSERR_NOMEM;
        /* indicate operation to be skipped */
        bSkip = TRUE;
    }
}
if(bSkip == FALSE)
{
    /* invoke entry point for original driver */
    dwRetVal = CallWidMessage(uDevId, uMsg, dwUser,
    dwParam1, dwParam2);
}
/* return to caller */
return dwRetVal;
}
```

It is noted that when properly configured, system hook **305** can govern nearly any function or property within nearly any media player application that may be operational within a client computer system, e.g., **210**-**230**. In one embodiment, system hook **305** is a DLL (dynamic link library) file. It is further noted that system hooks are well known in the art, and are a standard facility in a Microsoft Windows™ operating environment, and accordingly can be implemented in a variety of ways. However, it is also noted that system hook **305** can be readily adapted for implementation in alternative operating system, e.g., Apple™ operating systems, Sun Solaris™ operating systems, Linux operating systems, and nearly any other operating system.

In FIG. **3**, copyright compliance mechanism **300** also includes one or more skins **306**, which can be designed to be installed in a client computer system, e.g., **210**-**230**. In one embodiment, skins **306** are utilized to assist in client side compliance with the DMCA (digital millennium copyright act) regarding copyrighted media content. Skins **306** are customizable interfaces that, in one embodiment, are displayed on a display device (e.g., **105**) of computer system **210** and provide functionalities for user interaction of delivered media content. Additionally, skins **306** can also provide a display of information relative to the media content file including, but not limited to, song title, artist name, album title, artist bio, and other features such as purchase inquiries, advertising, and the like.

Furthermore, when system hook **305** is unable to govern a function of the media player application operable on a client computer system, e.g., **210**, such that client computer system could be in non-compliance with DMCA and/or RIAA restrictions, a skin **306** can be implemented to provide compliance.

Differing skins **306** can be implemented depending upon the DMCA and/or RIAA restrictions applicable to each media content file. For example, in one embodiment, a skin **306***a* may be configured for utilization with a media content file protected under a non-interactive agreement (DMCA), such that skin **306***a* may not include a pause function, a stop function, a selector function, and/or a save function, etc. Another skin, e.g., skin **306***b* may, in one embodiment, be configured to be utilized with a media content file protected under an interactive with "no save" agreement (DMCA), such that skin **306***b* may include a pause function, a stop function, a selector function, and for those media files having an interactive with "save" agreement, a save or a burn to CD function.

Still referring to FIG. **3**, it is further noted that in the present embodiment, each skin **306** can have a unique name and signature. In one embodiment, skin **306** can implemented, in part, through the utilization of an MD (message digest) 5 hash table or similar algorithm. An MD 5 hash table can, in one implementation, be a check-sum algorithm. It is well known in the art that a skin, e.g., skin **306**, can be renamed and/or modified to incorporate additional features and/or functionalities in an unauthorized manner. Since modification of the skin would change the check sum and/or MD 5 hash, without knowledge of the MD 5 hash table, changing the name or modification of the skin may simply serve to disable the skin, in accordance with one embodiment of the present invention. Since copyright compliance mechanism **300** verifies skin **306**, MD5 hash tables advantageously provide a deterrent against skin name changes and/or modifications made thereto.

In one embodiment, copyright compliance mechanism **300** also includes one or more custom media device driver(s) **307** for providing an even greater measure of control over the media stream while increasing compliance reliability. A client computer system, e.g., **210**, is configured to utilize a custom media device application, e.g., a custom audio device application, a custom video device application, etc., that is emulated by a custom media device driver **307**. With reference to audio media, the emulation is performed in a waveform audio driver associated with a custom audio device. Driver **307** is configured to receive a media file being outputted by system **210** prior to the media file being sent to a media output device, e.g., a video card for video files or a sound card for audio files, etc. In one embodiment, client computer system **210** is configured with a custom media device driver **307** as the default device driver for media file output. In one embodiment, an existing GUI (graphical user interface) can be utilized or a GUI can be provided, e.g., by utilization of a skin **306** or a custom web based player application, for forcing or requiring system **210** to have driver **307** as the default driver.

Therefore, when a media content file is received by system **210** from server **251**, the media content file is playable, provided the media content file passes through the custom media device application, emulated by custom media device driver **307**, prior to being outputted. However, if an alternative media player application is selected, delivered media files from server **251** will not play on system **210**.

Thus, secured media player applications would issue a media request to the driver for the custom media device which then performs necessary media input suppression, e.g., waveform suppression for audio files, prior to forwarding the request to the default Windows™ media driver, e.g., waveform audio driver for audio files.

It is noted that requests for non-restricted media files can pass directly through custom media device driver **307** to a Windows™ waveform audio driver operable on system **210**, thus reducing instances of incompatibilities with existing media player applications that utilize waveform media, e.g., audio, video, etc. Additionally, media player applications that do not support secured media would be unaffected. It is further noted that for either secured media or non-restricted

media, e.g., audio media files, waveform input suppression can be triggered by other components of CCM **300**, e.g., agents **304**, system hooks **305**, and skins **306**, or a combination thereof, to be active when a recording operation is initiated simultaneously with playback of secured media files, e.g., audio files. Custom device drivers are well known and can be coded and implemented in a variety of ways including, but limited to, those found at developers network web sites, e.g., a Microsof™ or alternative OS (operating system) developer web sites.

Advantageously, by virtue of system **210** being configured with a custom media device, emulated by a custom media device driver **307**, as the default device driver, those media player applications that require their particular device driver to be the default driver, e.g., Total Recorder, etc., are rendered non-functional for secured music. Further advantageous is that an emulated custom media device provides no native support for those media player applications used as a recording mechanism, e.g., DirectSound capture, etc., that are able to bypass user-mode drivers for most media devices. Additionally, by virtue of the media content being sent through device driver **307**, thus effectively disabling unauthorized saving/recording of media files, in one embodiment, media files that are delivered in a secured delivery system do not have to be encrypted, although, in another embodiment, they still may be encrypted. By virtue of non-encrypted media files utilizing less storage space and network resources than encrypted media files, networks having limited resources can utilize the functionalities of driver **307** of CCM **300** to provide compliance with copyright restrictions and/or licensing agreements applicable with a media content file without having the processing overhead of encrypted media files.

FIG. **4** is an illustration of an exemplary system **400** for implementing a copyright compliance mechanism in accordance with an embodiment of the present invention. Specifically, system **400** illustrates web server **250**, content server **251**, or a combination of web server **250** and content server **251** installing a copyright compliance mechanism (e.g., **300**) in a client's computer system (e.g., **210**) for controlling media file distribution and controlling user access and interaction of copyrighted media files, in one embodiment of the present invention.

Client computer system **210** can communicatively couple with a network (e.g., **200**) to request a media file, a list of available media files, or a play list of audio files, e.g., MP3 files, etc. In response, web server **250** determines if the request originates from a registered user authorized to receive media files associated with the request. If the user is not registered with the network, web server **250** can initiate a registration process with the requesting client **210**. Client registration can be accomplished in a variety of ways. For example, web server **250** may deliver to a client **210** a registration form having various text entry fields into which the user can enter required information. A variety of information can be required from the user by web server **250** including, but not limited to, user's name, address, phone number, credit card number, verifiable email address, and the like. In addition, registration can, in one embodiment, include a requirement for the user to select a username and password.

Still referring to FIG. **4**, web server **250** can, in one embodiment, detect information related to the client's computer system, e.g., **210**, and store that information in a user/media database **450**. For example, web server **250** can detect a unique identifier of client computer system **210**. In one embodiment, the unique identifier can be the MAC (machine address code) address of a NIC (network interface card) of client computer system **210** or the MAC address of the network interface adapter integrated on the motherboard of system **210**. It is understood that a NIC enables a client computer system **210** to access web server **250** via Internet **201**. It is well known that each NIC typically has a unique identifying number MAC address. Further, web server **250** can, in one embodiment, detect and store (also in database **450**) information regarding the types(s) of media player application(s), e.g., Windows Media Player™, Real Player™, iTunes player™ (Apple), Live 365™ player, and those media player applications having recording functionality, e.g., Total Recorder, Cool Edit 2000, Sound Forge, Sound Recorder, Super MP3 Recorder, and the like, that are present and operable in client computer system **210**. In one embodiment, the client information is verified for accuracy and is then stored in a user database (e.g., **450**) within web server **250**.

Subsequent to registration completion, creation of the user ID and password, and obtaining information regarding client computer system **210**, all or part of this information can be installed in client computer system **210**. In one embodiment, client computer system **210** information can be in the form of a cookie. Web server **250** then verifies that the user and client computer system **210** data is properly installed therein and that their integrity has not been compromised. Subsequently, web server **250** installs a copyright compliance mechanism (e.g., **300**) into the client's computer system, e.g., **210**, in one embodiment of the present invention. It is noted that web server **250** may not initiate installation of CCM **300** until the user ID, password, and client computer system **210** information is verified. A variety of common techniques can be employed to install CCM **300**. For example, copyright compliance mechanism **300** can be installed in a hidden directory within client computer system **210**, thereby preventing unauthorized access to it. In one embodiment of the present invention, it is noted that unless CCM **300** is installed in client computer system **210**, its user will not be able to request, access, or have delivered thereto, media files stored by web server **250** and/or content server **251**.

Referring still to FIG. **4**, upon completion of client registration and installation of CCM **300**, client computer system **210** can then request a media play list or a plurality of play lists, etc. In response, web server **250** determines whether the user of client computer system **210** is authorized to receive the media play list associated with the request. In one embodiment, web server **250** can request the username and password. Alternatively, web server **250** can utilize user database **450** to verify that computer **210** is authorized to receive a media play list. If client computer **210** is not authorized, web server **250** can initiate client registration, as described herein. Additionally, web server **250** can disconnect computer **210** or redirect it to an alternative web site. Regardless, if the user and client computer system **210** are not authorized, web server **250** will not provide the requested play list to client computer system **210**.

However, if client computer system **210** is authorized, web server **210** can check copyright compliance mechanism **300** within data base **450** to determine if it, or any of the components therein, have been updated since the last time client computer system **210** logged in to web server **250**. If a component of CCM **300** has been updated, web server **250** can install the updated component and/or a more current version of CCM **300** into client computer system **210**, e.g., via Internet **201**. If CCM **300** has not been updated, web server **250** can then deliver the requested media play list to system **210** via Internet **201** along with an appended user key or user identification (ID). It is noted that user database **450** can also include data for one or more media play lists that can be utilized to provide a media play list to client computer system

210. Subsequently, the user of client computer system **210** can utilize the received media play list in combination with the media player application operating on system **210** to transmit a delivery request for one or more desired pieces of media content from web server **250**. It is noted that the delivery request contains the user key for validation purposes.

Still referring to FIG. **4**, upon receiving the media content delivery request, web server **250** can then check the validity of the requesting media application and the attached user key. In one embodiment, web server **250** can utilize user database **450** to check their validity. If either or both are invalid, web server **250**, in one embodiment, can redirect unauthorized client computer system **210** to an alternative destination to prevent abuse of the system. However, if both the requesting media application and the user key are valid, CCM **300** verifies that skins **306** are installed in client computer system **210**. Additionally, CCM **300** further verifies that system hook(s) **305** have been run or are running to govern certain functions of those media player applications operable within client computer system **210** that are known to provide non-compliance with the DMCA and/or the RIAA. Additionally, CCM **300** further diverts and/or redirects certain pathways that are commonly used for recording. Once CCM **300** has performed the above described functions, web server **250** then, in one embodiment, issues to the client computer **210** a redirect command to the current address location of the desired media file content along with an optional time sensitive access key, e.g., for that hour, day, or other defined timeframe.

In response to the client computer system **210** receiving the redirect command from web server **250**, the media player application operating on client computer system **210** automatically transmits a new request and the time sensitive access key to content server **251** for delivery of one or more desired pieces of media content. The validity of the time sensitive access key is checked by content server **251**. If invalid, unauthorized client computer **210** is redirected by content server **250** to protect against abuse of the system and unauthorized access to content server **251**. If the time sensitive access key is valid, content server **251** retrieves the desired media content from content database **45** land delivers it to client computer system **210**. It is noted that, in one embodiment, the delivered media content can be stored in hidden directories and/or custom file systems that may be hidden within client computer system **210** thereby preventing future unauthorized distribution. In one embodiment, an HTTP (hypertext transfer protocol) file delivery system is used to deliver the requested media files, meaning that the media files are delivered in their entirety to client computer system **210**, as compared to streaming media which delivers small portions of the media file.

Still referring to FIG. **4**, it is noted that each media file has, in one embodiment, had a header attached therewith prior to delivery of the media file. In one embodiment, the header can contain information relating to the media file, e.g., title or media ID, media data such as size, type of data, and the like. The header can also contain a sequence or key that is recognizable to copyright compliance mechanism **300** that identifies the media file as originating from a content server **251**. In one embodiment, the header sequence/key can also contain instructions for invoking the licensing agreements and/or copyright restrictions that are applicable to that particular media file.

Additionally, if licensing agreements or copyright restrictions are changed, developed, or created, or if new media player applications, with or without recording functionality, are developed, CCM **300** would have appropriate modifications made to portions of components, entire components, combinations of components, and/or the entire CCM **300** to enable continued compliance with licensing agreements and copyright restrictions. Furthermore, subsequent to modification of copyright compliance mechanism **300**, modified portions of, or the entire updated CCM **300** can easily be installed in client computer system **210** in a variety of ways. For example, the updated CCM **300** can be installed during client interaction with web server **250**, during user log-in, and/or while client computer system **210** is receiving the keyed play list.

Referring still to FIG. **4**, it is further noted that, in one embodiment, the media files and attached headers can be encrypted prior to being stored within content server **251**. In one embodiment, the media files can be encrypted utilizing randomly generated keys. Alternatively, variable length keys can be utilized for encryption. It is noted that the key to decrypt the encrypted media files can be stored in a database **450**, content database **451** or in some combination of databases **450** and **451**. It is further noted that the messages being passed back and forth between client computer system **210** and web server **250** can also be encrypted, thereby protecting the media files and the data being exchanged from unauthorized use or access. There are a variety of encryption mechanisms and programs that can be implemented to encrypt this data including, but not limited to, exclusive OR, shifting with adds, public domain encryption programs such as Blowfish, and non-public domain encryption mechanisms. It is also noted that each media file can be uniquely encrypted, such that if the encryption code is cracked for one media file, it is not applicable to other media files. Alternatively, groups of media files can be similarly encrypted. Furthermore, in another embodiment, the media files may not be encrypted when being delivered to a webcaster known to utilize a proprietary media player application, e.g., custom media device driver **307**.

Subsequent to media file decryption, the media file may be passed through CCM **300**, e.g., a coder/decoder **303**, to a media player application operating on client computer system **210** which can then access and utilize the delivered high fidelity media content, enabling its user(s) to experience the media content, e.g., listen to it, watch it, view it, or the like. In one embodiment of the present invention, a specialized or custom media player may or may not be required to experience the media content, e.g., skin **306** of FIG. **3**. A skin **306** may be necessary when CCM **300** cannot modify an industry standard media player application to comply with copyright restrictions and/or licensing agreements in accordance with the DMCA. Alternatively, an industry standard media player can be utilized by client computer system **210** to experience the media content. Typically, many media player applications are available and can include, but are not limited to, Windows™ Media Player™ for PCs (personal computers), iTunes™ Player or QuickTime™ for Apple computers, and XMMS player for computers utilizing a Linux operating system. Regardless of the media player application utilized, while the media file is passed to the media player application, e.g., in a frame by frame basis or in a buffer, coder/decoder **303** will repeatedly ensure that CCM **300** rules are being enforced at any particular moment during media playback, shown as step **550** of FIG. **5**C.

As the media file content is delivered to the media player application, periodically, e.g., after a specified number of frames, after a defined period of time, or any desired time or data period, coder/decoder **303** repeatedly determines whether or not all the rules are enforced, in accordance with rules as defined by CCM **300**. If the rules are not enforced, e.g., change due to a user opening up a recording application,

e.g., Total Recorder or alternative application, the presentation of the media content is, in one embodiment, suspended or halted. In another embodiment, the presentation of the media content can be modified to output the media content non audibly, e.g., silence. In yet another embodiment, the media content may be audible but recording functionality can be disabled, such that the media content cannot be recorded. These presentation stoppages are collectively shown as step **551** of FIG. **5**C.

If the rules, in accordance with CCM **300**, are enforced, the codec/decoder **303** retrieves a subsequent portion of the media content that is stored locally in client computer system **210**. The newly retrieved portion of the media file is then presented by the client's media player application. While the newly retrieved portion is presented, CCM **300** then again checks that the rules are enforced, and retrieves an additional portion of the media file or suspends presentation of the media file is the rules are not being enforced, and these steps are performed repeatedly throughout the playback of the media file, in a loop environment, until the media file's contents have been presented in their entirety. Advantageously, by constant monitoring during playing of media files, CCM **300** can detect undesired activities and enforces those rules as defined by CCM **300**.

FIGS. **5**A, **5**B, and **5**C, are a flowchart **500** of steps performed in accordance with one embodiment of the present invention for controlling end user interaction of delivered electronic media. Flowchart **500** includes processes of the present invention which, in one embodiment, are carried out by processors and electrical components under the control of computer readable and computer executable instructions. The computer readable and computer executable instructions reside, for example, in data storage features such as computer usable volatile memory **104** and/or computer usable non-volatile memory **103** of FIG. **1**. However, the computer readable and computer executable instructions may reside in any type of computer readable medium. Although specific steps are disclosed in flowchart **500**, such steps are exemplary. That is, the present invention is well suited to performing various other steps or variations of the steps recited in FIGS. **5**A, **5**B, and **5**C. Within the present embodiment, it should be appreciated that the steps of flowchart **500** may be performed by software, by hardware or by any combination of software and hardware.

The present embodiment provides a mechanism for controlling interaction of high fidelity media content delivered via one or more communication networks. The present embodiment delivers the high fidelity media content to registered clients while preventing unauthorized clients from directly receiving media content from a source database. Once the client computer system receives the media content, it can be stored in hidden directories and/or custom file systems that may be hidden to prevent subsequent unauthorized sharing with others. It is noted that various functionalities can be implemented to protect and monitor the delivered media content. For example, the physical address of the media content can be hidden from media content recipients. In another example, the directory address of the media content can be periodically changed. Additionally, an access key procedure and rate control restrictor can also be implemented to monitor and restrict suspicious media content requests. Furthermore, a copyright compliance mechanism, e.g., CCM **300**, can be installed in the client computer system **210** to provide client side compliance with licensing agreements and copyright restrictions applicable to the media content. By implementing these and other functionalities, the present embodiment restricts access to and the distribution of delivered media content and provides a means for copyrighted media owner compensation.

It is noted that flowchart **500** is described in conjunction with FIGS. **2**, **3**, and **4**, in order to more fully describe the operation of the present embodiment. In step **502** of FIG. **5**A, a user of a computer system, e.g., **210**, causes the computer to communicatively couple to a web server, e.g., **250**, via one or more communication networks, e.g., Internet **201**, and proceeds to attempt to log in. It is understood that the log in process of step **502** can be accomplished in a variety of ways in accordance with the present invention.

In step **504** of FIG. **5**A, web server **250** accesses a user database, e.g., **450**, to determine whether the user and the computer system **210** logging in are registered with it. If the user and computer system **210** are registered with web server **250**, the present embodiment proceeds to step **514**. However, if the user and computer system **210** are logging in for the first time, web server **250** can initiate a user and computer system **210** registration process at step **506**.

In step **506**, registration of the user and computer system **210** is initiated. The user and computer system registration process can involve the user of computer system **210** providing personal information including, but not limited to, their name, address, phone number, credit card number, and the like. Web server **250** can verify the accuracy of the information provided. Web server **250** can also acquire information regarding the user's computer system **210** including, but not limited to, identification of media players disposed and operable on system **210**, a unique identifier corresponding to the computer system, etc. In one embodiment, the unique identifier corresponding to the computer system can be a MAC address. Additionally, web server **250** can further request that the user of computer system **210** to select a username and password.

In step **508** of FIG. **5**A, subsequent to the completion of the registration process, web server **250** generates a unique user identification (ID) or user key associated with the user of client computer system **210**. The unique user ID, or user key, is then stored by web server **250** in a manner that is associated with that registered user. Furthermore, one or more cookies containing that information specific to that user and the user's computer system **210**, is installed in a non-volatile memory device, e.g., **103** and/or data storage device **108** of computer system **210**. It is noted that the user ID and cookie can be stored in a hidden directory within one or more non-volatile memory devices within computer system **210**, thereby preventing user access and/or manipulation of that information. It is further noted that if the unique user ID, or user key, has been previously generated for the user and computer **210** that initially logged-in at step **502**, the present embodiment proceeds to step **514**

In step **510**, web server **250** verifies that the user ID and the cookie(s) are properly installed in computer system **210** and verifies the integrity of the cookie(s) and the user ID, thereby ensuring no unauthorized alterations to the user ID or the cookie has occurred. If the user ID is not installed and/or not valid, web server **250** can re-initiate the registration process at step **506**. Alternatively, web server **250** can decouple computer system **210** from the network, thereby requiring a re-log in by the user of computer **210**. If the cookie(s) and user ID are valid, the present embodiment proceeds to step **512**.

In step **512** of FIG. **5**A, web server **250** can install a version of a copyright compliance mechanism **300** into one or more non-volatile memory devices of computer system **210**. Installing CCM **300** into user's computer system **210** facilitates client side compliance with licensing agreements and

copyright restrictions applicable to specific delivered copyrighted media content. At step **512**, the components of CCM **300**, such as instructions **301**, coder/decoder (codec) **303**, agent programs **304**, system hooks **305**, skins **306**, and custom media device drivers **307**, are installed in computer system **210**. In one embodiment, a hypertext transfer protocol file delivery system can be utilized to install CCM **300** into computer system **210**. However, step **512** is well suited to install CCM **300** on computer system **210** is a wide variety of ways in accordance with the present embodiment.

In step **514**, web server **250** can request the previously established username and password of the user of client computer system **210**. Accordingly, the user of client computer system **210** causes it to transmit to web server **250** the previously established username and password. Upon the receipt thereof, web server **250** may access a user database, e.g., **450**, to determine their validity. If the username and password are invalid, web server **250** refuses access wherein flowchart **500** may be discontinued (not shown). Alternatively, if the username and password are valid, the present embodiment proceeds to step **516**.

In step **516** of FIG. **5**A, web server **250** can access media file database **450** to determine if copyright compliance mechanism **300** has been updated to reflect changes made to the DMCA (digital millennium copyright act) and/or to the interactive/non-interactive licensing agreements recognized by the DMCA. It is noted that alternative licensing agreements can be incorporated into copyright compliance mechanism **300**. Advantageously, by providing a copyright compliance mechanism that can be readily updated to reflect changes in existing copyright restrictions and/or the introduction of other types of licensing agreements, and/or changes to existing media player applications, or the development of new media player applications, copyright compliance mechanism **300** can provide compliance with current copyright restrictions.

Continuing with step **516**, if web server **250** determines that CCM **300**, or components thereof, of computer **210** has been updated, web server **250** initiates installation of the newer components and/or the most current version of CCM **300** into computer system **210**, shown as step **518**. If web server **250** determines that the current version of CCM **300** installed on system **210** does not have to be updated, the present embodiment proceeds to step **520** of FIG. **5**B.

In step **520** of FIG. **5**B, the user of client computer system **210** causes it to transmit to web server **250**, e.g., via Internet **201**, a request for a play list of available media files. It is noted that the play list can contain all or part of the media content available from a content server, e.g., **251**.

In step **522**, in response to web server **250** receiving the play list request, web server **250** transmits to client computer system **210** a media content play list together with the unique user ID associated with the logged-in user. The user ID, or user key, can be attached to the media content play list in a manner invisible to the user. It is noted that the media content in content server **251** can be, but is not limited to, high fidelity music, audio, video, graphics, multimedia, alphanumeric data, and the like. The media content play list of step **520** can be implemented in diverse ways. In one example, web server **250** can generate a media content play list by combining all the available media content into a single play list. Alternatively, all of the media content titles, or different lists of titles, can be loaded from content server **251** and passed to a CGI (common gateway interface) program operating on web server **250** where the media titles, or differing lists of titles, can be concatenated into a single dimensioned array that can be provided to client computer system **210**. It is understood that the CGI can be written in nearly any software computing language.

In step **524** of FIG. **5**B, the user of client computer system **210** can utilize the received media content play list in conjunction with a media player application in order to cause client computer system **210** to transmit a request to web server **250** for delivery of desired media content, and wherein the user ID is automatically included therewith. The media content play list provided to client computer system **210** by web server **250** can enable the user to create one or more customized play lists by the user selecting desired media content titles. It is noted that a customized media play list can establish the media content that will eventually be delivered to client computer system **250** and the order in which the content will be delivered. Additionally, the user of client computer system **250** can create one or more customized play lists and store those play lists in system **250** and/or within web server **250**. It is noted that a customized play list does not actually contain the desired media content titles, but rather the play list includes one or more identifiers associated with the desired media content that can include, but is not limited to, a song, an audio clip, a video clip, a picture, a multimedia clip, an alphanumeric document, or particular portions thereof. In another embodiment, the received media content play list can include a random media content delivery choice that the user of client computer system **210** can transmit to web server **250**, with the user ID, to request delivery of the media content in a random manner.

In step **526**, upon receiving the request for media content from client computer system **210**, web server **250** determines whether the requesting media application operating on client computer system **210** is a valid media application. One of the functions of a valid media application is to be a player of media content as opposed to an application that downloads media content in an unauthorized or unregulated manner. If web server **250** determines that the media application operating on system **210** is not a valid media application, the present embodiment proceeds to step **527** which in one embodiment, redirects client computer system **210** to a web site where the user of system **210** can download a valid media player application or to a software application which can identify client computer system **210**, log system **210** out of web server **250** and/or prevent future logging-in for a defined period of time, e.g., 15 minutes, an hour, a day, a week, a month, a year, or any specified amount of time. If web server **250** determines that the media application operating on system **210** is a valid media application, the present embodiment proceeds to step **528**.

In step **528** of FIG. **5**B, the present embodiment causes web server **250** to determine whether the user ID (or user key) that accompanied the media delivery request sent by client computer system **210** is valid. If web server **250** determines that the user ID is invalid, the present embodiment proceeds to step **529** where client computer system **210** can be logged off web server **250** or client computer system **250** can be returned to step **506** (of FIG. **5**A) to re-register and to have another unique user ID generated by web server **250**. It is noted that the order in which steps **526** and **528** are performed can be altered such that step **528** can be performed prior to step **526**. If web server **250** determines that the user ID is valid, the present embodiment proceeds to step **530**.

In step **530**, prior to web server **250** authorizing the delivery of the redirect and access key for the requested media file content, shown as step **532**, CCM **300** governs certain media player applications and/or functions thereof that are operable on client computer system **210**. These governed functions can

include, pause, stop, progress bar, save, etc. It is noted that, in one embodiment, CCM **300** can utilize system hooks **305** to accomplish the functionality of step **530**.

In step **532** of FIG. **5**C, the present embodiment causes web server **250** to transmit to client computer system **210** a redirection command along with a time sensitive access key (for that hour, day or for any defined period of time) thereby enabling client computer system **210** to receive the requested media content. The redirection command can include a time sensitive address of the media content location within content server **251**. The address is time sensitive because, in one embodiment, the content server **251** periodically renames some or all of the media address directories, thereby making previous content source addresses obsolete. Alternatively, the address of the media content is changed. In another embodiment, the location of the media content can be changed along with the addresses. Regardless, unauthorized users and/or applications are restricted from directly retrieving and/or copying the media content from content server **251**. Therefore, if someone with inappropriate or unlawful intentions is able to find where the media content is stored, subsequent attempts will fail, as the previous route no longer exists, thereby preventing future unauthorized access.

It is noted that in one embodiment of the present invention, the addresses (or routes) of content server **251** that are actively coupled to one or more client computer systems (e.g., **210**-**230**) are maintained while future addresses, or routes, are being created for new client devices. It is further noted that as client computer systems are uncoupled from the media content source of content server **251**, that directory address, or link, can be immediately changed, thereby preventing unauthorized client system or application access.

In another embodiment, the redirection of client computer system **210** to content server **251** can be implemented by utilizing a server network where multiple servers are content providers, (e.g., **251**), or by routing a requesting client computer system (e.g., **210**, **220**, or **230**) through multiple servers. In yet another embodiment, the delivery of media content from a central content provider (e.g., **251**) can be routed through one or more intermediate servers before being received by the requesting client computer system, e.g., **210**-**230**.

The functionality of step **532** is additionally well suited to provide recordation of the Internet Protocol (IP) addresses of the client computer systems, e.g., **210**, the media content requested and its transfer size, thereby enabling accurate monitoring of royalty payments, clock usage and transfers, and media content popularity.

In step **534** of FIG. **5**C, upon receiving the redirection command, the present embodiment causes the media application operating on client computer system **210** to automatically transmit to content server **251** a new media delivery request which can include the time sensitive access key and the address of the desired media content.

In step **536** of FIG. **5**C, content server **251** determines whether the time sensitive access key associated with the new media delivery request is valid. If content server **251** determines that the time sensitive access key is valid, the present embodiment proceeds to step **538** of FIG. **5**C. However, if content server **251** determines that the time access key is not valid, the present embodiment proceeds to step **537**, a client redirect.

In step **537**, content server redirects client computer **210** to step **532** (not shown) where a new access key is generated. Alternatively, step **537** causes the present embodiment to return to step **504** of FIG. **5**A. In yet another embodiment, step **537** causes client computer system **210** to be disconnected from content server **251**.

In step **538** of FIG. **5**C, content server **251** transmits the requested high fidelity media content to client computer system **210**. It is noted that each media content file delivered to client computer system **210** can have a header attached thereto, prior to delivery, as described with reference to FIG. **4**. It is further noted that both the media content and the header attached thereto can be encrypted. In one embodiment, the media content and the header can be encrypted differently. Alternatively, each media content file encrypted differently. In another embodiment, groups of media files are analogously encrypted. It is noted that public domain encryption mechanisms, e.g., Blowfish, and/or non-public domain encryption mechanisms can be utilized.

Still referring to step **538**, content server **251** transmits the requested media content in a burst load (in comparison to a fixed data rate), thereby transferring the content to client computer system **210** as fast as the network transfer rate allows. Further, content server **251** can have its download rate adapted to be equal to the transfer rate of the network to which it is coupled. In another embodiment, the content server **251** download rate can be adapted to equal the network transfer rate of the client computer system **210** to which the media content is being delivered. For example, if client computer system **210** is coupled to Internet **201** via a T1 connection, then content server **251** transfers the media content at transmission speeds allowed by the T1 connection line. As such, once the requested media content is transmitted to client computer system **210**, content server **251** is then able to transmit requested media content to another client computer system, e.g., **220** or **230**. Advantageously, this provides an efficient means to transmit media content, in terms of statistical distribution over time and does not overload the communication network(s).

It is noted that delivery of the requested media content by content server **250** to client computer system **210** can be implemented in a variety of ways. For example, an HTTP (hypertext transfer protocol) file transfer protocol can be utilized to transfer the requested media content as well as a copyright compliance mechanism **300** to client **210**. In this manner, the copyright compliance mechanism as well as each media content file/title can be delivered in its entirety. In another embodiment, content server **251** can transmit to client computer system **250** a large buffer of media content, e.g., audio clips, video clips, and the like.

In step **540** of FIG. **5**C, upon receiving the requested high fidelity media content from content server **251**, the present embodiment causes client computer system **210** to store the delivered media content in a manner that is ready for presentation, e.g., play. The media content is stored in client computer system **210** in a manner that restricts unauthorized redistribution. For example, the present embodiment can cause the high fidelity media content to be stored in a volatile memory device, utilizing one or more hidden directories and/or custom file systems that may be hidden, where it may be cached for a limited period of time. Alternatively, the present embodiment can cause the high fidelity media content to be stored in a non-volatile memory device, e.g., **103** or data storage device **108**. It is noted that the manner in which each of the delivered media content file(s) is stored, volatile or non-volatile, can be dependent upon the licensing restrictions and copyright agreements applicable to each media content file. It is further noted that in one embodiment, when a user of client computer system **210** turns the computer off or causes

client computer system **210** to disconnect from the network, the media content stored in a volatile memory device is typically deleted therefrom.

Still referring to step **540**, in another embodiment, the present embodiment can cause client computer system **210** to store the received media content in a non-volatile manner within a media application operating therein, or within one of its Internet browser applications (e.g., Netscape Communicator™, Microsoft Internet Explorer™, Opera™, Mozilla™, and the like) so that delivered media content can be used in a repetitive manner. Further, the received media content can be stored in a manner making it difficult for a user to redistribute in an unauthorized manner, while allowing the user utilization of the received media content, e.g., by utilizing one or more hidden directories and/or custom file systems that may also be hidden. It is noted that by storing media content with client computer system **210** (when allowed by applicable licensing agreements and copyright restrictions), content server **251** does not need to redeliver the same media content to client computer system **210** each time its user desires to experience (e.g., listen to, watch, view, etc.) the media content file.

In step **542** of FIG. **5**C, the received media content file is then fed into a media player application, which then runs it through a codec, e.g., coder/decoder **303** of CCM **300**, in one embodiment. In response, coder/decoder **303** sends an authorization request to the server, e.g., **251**, with attached authorization data, as described herein. In response to receiving codec's **303** authorization request, server **251** compares the received authorization data with that stored in server **251**, and subsequently, the present embodiment proceeds to step **544**.

In step **544**, the server **251** responds with a pass or fail authorization. If server **251** responds with a fail, such that the received authorization data is invalid, the present method can proceed to step **545**, where server **251** can, in one embodiment, notify the user of client system **210**, e.g., by utilization of skin **306**, that there was an unsuccessful authorization of the requested media content file. It is noted that alternative messages having similar meanings may also be presented to the user of client computer system **210**, thereby informing the user that the delivery failed. However, if the authorization data passes, the present method proceeds to step **546**.

In step **546**, server **251** transmits certain data back to the media player application which enables the media player application to present the contents of the media file. In one embodiment, a decryption key can be included in the transmitted data to decrypt the delivered media content file. In another embodiment, an encryption/decryption key can be included in the transmitted data to allow access to the contents of the media file. The present method then proceeds to step **548**.

In step **548** of FIG. **5**C, subsequent to media file decryption, the media file may be passed through CCM **300**, e.g., a coder/decoder **303**, to a media player application operating on client computer system **210** which can then access and utilize the delivered high fidelity media content, enabling its user(s) to experience the media content, e.g., listen to it, watch it, view it, or the like. In one embodiment of the present invention, a specialized or custom media player may be required to experience the media content, e.g., skin **306** of FIG. **3**. Skin **306** may be necessary when CCM **300** cannot modify an industry standard media player application to comply with copyright restrictions and/or licensing agreements in accordance with the DMCA. Alternatively, a specialized or custom media player may not be needed to experience the media content. Instead, an industry standard media player can be utilized by client computer system **210** to experience the media content. Typically, many media player applications are available and can include, but are not limited to, Windows™ Media Player™ for PCs (personal computers), iTunes™ Player or QuickTime™ for Apple computers, and XMMS player for computers utilizing a Linux operating system. Regardless of the media player application utilized, while the media file is passed to the media player application, e.g., in a frame by frame basis or in a buffer by buffer basis, coder/decoder **303** will repeatedly ensure that CCM **300** rules are being enforced at any particular moment during media playback, shown as step **550**.

In step **550**, as the media file content is delivered to the media player application, periodically, e.g., after a specified number of frames, after a defined period of time, or any desired time or data period, coder/decoder **303** repeatedly determines whether or not all the rules are enforced, in accordance with rules as defined by CCM **300**. If the rules are not enforced, e.g., change due to a user opening up a recording application, e.g., Total Recorder or alternative application, the present method proceeds to step **551**. If the rules, in accordance with CCM **300**, are enforced, the present method then proceeds to step **552**.

In step **551**, if the rules according to CCM **300** are not enforced, the presentation of the media content is, in one embodiment, suspended or halted. In another embodiment, the presentation of the media content can be modified to output the media content non audibly, e.g., silence. In yet another embodiment, the media content may be audible but recording functionality can be disabled, such that the media content cannot be recorded.

In step **552**, if the rules are enforced, in accordance with CCM **300**, coder/decoder **303** retrieves a subsequent portion of the media content that is stored locally in client computer system **210**. The newly retrieved portion of the media file is then presented by the client's media player application, shown in the present method as step **548**. While the newly retrieved portion is presented, embodiments of the present method then again perform step **550**, then step **552** or **551**, then step **548**, then **550**, etc., in a continual loop until the media file contents are presented in their entirety. Advantageously, by constant monitoring during playing of media files, CCM **300** can detect undesired activities and enforces those rules as defined by CCM **300**.

FIG. **6** is a diagram of an exemplary high-speed global media content delivery system **600**, in accordance with one embodiment of the present invention. In one embodiment, system **600** can be utilized to globally deliver media content, e.g., audio media, video media, graphic media, multimedia, alphanumeric media, etc., to a client computer system, e.g., **210**, **220**, and/or **230**, in conjunction with a manner of delivery similar to that described herein. In one embodiment, system **600** includes a global delivery network **602** that can include multiple content servers, e.g., **604**, **606**, **608**, **610**, **612**, **614**, and **616**, that can be located throughout the world and which may be referred to as points of presence or media delivery point(s). Each of content server **604-616** can store a portion, a substantial portion, or the entire contents of a media content library that can be delivered to client computer systems via a network, e.g., Internet **201**, or a WAN (wide area network). Accordingly, each of content server **604-616** can provide media content to of client computer systems in its respective vicinity in the world. Alternatively, each content server can provide media content to a substantial number of client computer systems

For example, a media delivery point (MDP) **616**, located in Tokyo, Japan, is able to provide and deliver media content from the media content library stored in its content database, e.g., **451**, to client computer systems within the Asiatic

regions of the world while a media delivery point **612**, located in New York City, N.Y., USA, is able to provide and deliver media content from its stored media content library to client devices within the Eastern United States and Canada. It is noted that each city name, e.g., London, Tokyo, Hamburg, San Jose, Amsterdam, or New York, associated with one of the media delivery points **604-616** represents the location of that particular media delivery point or point of presence. However, it is further noted that these city names are exemplary because media delivery points **604-616** can located anywhere within the world, and as such are not limited to the cities shown in global network **602**.

Still referring to FIG. **6**, it is further noted that global system **602** is described in conjunction with FIGS. **2**, **3**, **4**, and **5**, in order to more fully describe the operation of embodiment of the present invention. Particularly, subsequent to a client computer system, e.g., client computer system **210** of FIG. **2**, interacting with a web server, e.g., web server **250** of FIG. **2**, as described herein, web server **250**, in one embodiment, can redirect client computer system **210** to receive the desired media content from an MDP (e.g., **604-616**) based on one or more differing criteria.

For example, computer system **210** may be located in Brattleboro, Vt., and its user causes it to log-in with a web server **250** which can be located anywhere in the world. It is noted that steps **502-530** of FIGS. **5**A and **5**B can then be performed as described herein such that the present embodiment proceeds to step **532** of FIG. **5**C. At step **532**, the present embodiment can determine which media delivery points, e.g., **604**, **606**, **608**, **610**, **612**, **614**, or **616**, can subsequently provide and deliver the desired media content to client computer system **210**.

Still referring to FIG. **6**, one or more differing criteria can be utilized to determine which media delivery point to select for delivery of the desired media content. For example, the present embodiment can base its determination upon which media delivery point is in nearest proximity to client computer system **210**, e.g., media delivery point **616**. This can be performed by utilizing the stored registration information, e.g., address, provided by the user of client computer system **210**. Alternatively, the present embodiment can base its determination upon which media delivery point provides media content to the part of the world in which client computer system is located. However, if each media delivery point (e.g., **604-616**) stores differing media content, the present embodiment can determine which one can actually provide the desired media content. It is noted that these are exemplary determination criteria and the embodiments of the present invention are not limited to such implementation.

Subsequent to determination of which media delivery point is to provide the media content to client computer system **210** at step **532**, web server **250** transmits to client computer system **210** a redirection command to media delivery point/content server **612** along with a time sensitive access key, also referred to as a session key, (e.g., for that hour, day, or any defined time frame) thereby enabling client computer system **210** to eventually receive the requested media content. Within system **600**, the redirection command can include a time sensitive address of the media content location within media delivery point **612**. Accordingly, the New York City media delivery point **612** can subsequently provide and deliver the desired media content to client computer system **210**. It is noted that steps **532-542** and step **537** of FIG. **5**C can be performed by media delivery point **512** in a manner similar to content server **251** described herein.

Advantageously, by utilizing multiple content servers, e.g., media delivery point **604-616**, to provide high fidelity media content to client computer systems, e.g., **210-230**, located throughout the world, communication network systems of the Internet **201** do not become overly congested. Additionally, global network **602** can deliver media content to a larger number of client computer systems (e.g., **210-230**) in a more efficient manner. Furthermore, by utilizing communication technology having data transfer rates of up to 320 Kbps (kilobits per second) or higher, embodiments of the present invention provide for rapid delivery of the media content in a worldwide implementation.

Referring still to FIG. **6**, it is noted that media delivery points/content servers **604-616** of global network **602** can be coupled in a wide variety of ways in accordance with the present embodiment. For example, media delivery point **604-616** can be coupled utilizing wired and/or wireless communication technologies. Further, it is noted that media delivery points **604-616** can be functionally coupled such that if one of them fails, another media delivery point can take over and fulfill its functionality. Additionally, one or more web servers similar to web server **250** can be coupled to global network **602** utilizing wired and/or wireless communication technologies.

Within system **600**, content server/media delivery point **604** includes a web infrastructure that, in one embodiment, is a fully redundant system architecture. It is noted that each MDP/content server **606-616** of global network **602** can be implemented to include a web infrastructure in a manner similar to the implementation shown in MDP **604**.

Specifically, the web infrastructure of media delivery point **604** includes firewalls **618** and **620** which are each coupled to global network **602**. Firewalls **618** and **620** can be coupled to global network **602** in diverse ways, e.g., utilizing wired and/or wireless communication technologies. Particularly, firewalls **618** and **620** can each be coupled to global network **602** via a 10/100 Ethernet handoff. However, system **600** is not limited in any fashion to this specific implementation. It is noted that firewalls **618** and **620** are implemented to prevent malicious users from accessing any part of the web infrastructure of media delivery point/content **604** in an unauthorized manner. Additionally, firewall **618** includes a device **636**, e.g., a router or other switching mechanism, coupled therewith and a DB (database) server **640** coupled to device **636** while firewall **620** includes a device **638**, e.g., a router or other switching mechanism, coupled therewith and a DB (database) server **642** coupled to device **638**. Furthermore, DB server **640** is coupled with device **638** and DB server **542** is coupled with device **536**.

Still referring to FIG. **6**, and within media delivery point **604**, firewall **618** is coupled to a director device **622** which is coupled to internal web application server **626** and **628**, and a hub server **630**. Firewall **620** is coupled to a director **624** which is coupled to internal web application servers **626** and **628**, and hub server **630**. Hub server **630** can be implemented in a variety of ways including, but not limited to, as a Linux hub server. Hub server **530** is coupled to a data storage device **632** capable of storing media content. Data storage device **632** can be implemented in a variety of ways, e.g., as a RAID (redundant array of independent disks) appliance.

It is noted that media delivery points **604-616** can be implemented in any manner similar to content server **250** described herein. Additionally, media delivery points **604-616** of the present embodiment can each be implemented as one or more physical computing devices, e.g., computer system **100** of FIG. **1**.

Advantageously, by providing a copyright compliance mechanism, e.g., **300**, which can be easily and readily installed in a client computer system, e.g., **210**, embodiments

of the present invention can be implemented to control access to, control the delivery of, and control the user's experience with media content subject to copyright restrictions and licensing agreements, fore example, as defined by the DMCA. Additionally, by closely associating a client computer system, e.g., **210**, with the user thereof, and the media content they receive, embodiments of the present invention further provide for accurate royalty recording.

The foregoing disclosure regarding specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and many modifications and variations are possible in light of above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, to thereby enable others skilled in the art to best utilize the invention and various embodiments with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the claims appended hereto and their equivalents.

What is claimed is:

1. A method of controlling interaction of deliverable electronic media comprising:

detecting a media player application operable with a computer system, said media player application for enabling said computer system to present contents of a media file; and

utilizing a compliance mechanism to control an output of said media file by said media player, said compliance mechanism diverting a commonly used data pathway output of said media player application to a controlled data output pathway monitored by said compliance mechanism after said media player begins to present said contents of said media file, said compliance mechanism utilized to stop or disrupt the playing of said content of said media file at said controlled data output pathway when said playing of said content of said media file is outside of said usage restriction applicable to said media file.

2. The method as recited in claim **1** further comprising delivering said media file to said computer system, said media file delivered from a server coupled with said computer system.

3. The method as recited in claim **2** further comprising attaching a header to said media file prior to delivery to said computer system, said header comprising: an indicator for indicating to said compliance mechanism that said media file originated from said server.

4. The method as recited in claim **1** further comprising utilizing said media player application to present contents of said media file, provided said media player application complies with said usage restriction.

5. The method as recited in claim **1** further comprising installing said compliance mechanism onto said computer system, said compliance mechanism configured to perform said detecting and said enabling.

6. The method as recited in claim **5** further comprising altering said compliance mechanism in response to changes in said usage restriction.

7. The method as recited in claim **6** further comprising installing a custom media player application on said computer system and configured to be operable when said media player application does not comply with said usage restriction.

8. The method as recited in claim **1** further comprising verifying the presence and the integrity of authorization data stored on said computer system, said verifying performed by said compliance mechanism prior to delivery of said media file to said computer system.

9. The method as recited in claim **1** further comprising encrypting said media file and a header attached therewith prior to delivery of said media file to said computer system.

10. The method as recited in claim **1** further comprising monitoring said media file during presentation of said contents for compliance with said usage restrictions, said monitoring performed by said compliance mechanism.

11. The method as recited in claim **1** wherein said media file is delivered via a hypertext transfer protocol file delivery.

12. The method as recited in claim **1** wherein said usage restriction is a copyright restriction or a licensing agreement applicable to said media file.

13. A computer readable medium for storing computer implementable instructions, said instructions for causing a compliance mechanism to perform a method of controlling interaction of a media file, said method comprising:

discovering a media player application operable within a client computer system, said media player application for presenting contents of a media file deliverable to said client computer system; and

utilizing a compliance mechanism to control an output of said media file by said media player, said compliance mechanism diverting a commonly used data pathway output of said media player application to a controlled data output pathway monitored by said compliance mechanism after said media player begins to present said contents of said media file, said compliance mechanism utilized to stop or disrupt the playing of said content of said media file at said controlled data output pathway when said playing of said content of said media file is outside of said usage restriction applicable to said media file.

14. The computer readable medium of claim **13** wherein said instructions cause said compliance mechanism to perform said method further comprising:

initiating delivery of said media file to said client computer system from a server coupled with said client computer system.

15. The computer readable medium of claim **13** wherein said instructions cause said compliance mechanism to perform said method further comprising:

detecting an indicator associated with said media file, said indicator for indicating said media file originated from said server.

16. The computer readable medium of claim **13** wherein said instructions cause said compliance mechanism to perform said method further comprising:

utilizing said media player application to present said contents of said media file, provided said media player application complies with said usage restriction.

17. The computer readable medium of claim **16** wherein said instructions cause said compliance mechanism to perform said method further comprising:

bypassing said media player application and invoking a custom media player application coupled with said client computer system when said media player application does not comply with usage restrictions applicable to said media file, said custom media player application for presenting contents of said media file in a manner compliant with said usage restriction.

18. The computer readable medium of claim **13** wherein said instructions cause said compliance mechanism to perform said method further comprising:

verifying the presence and integrity of authorization data stored on said client computer system.

19. The computer readable medium of claim **13** wherein said instructions cause said compliance mechanism to perform said method further comprising:

initiating an installation of a newer version of said copyright compliance mechanism.

20. The computer readable medium of claim **13** wherein said instructions cause said compliance mechanism to perform said method further comprising:

monitoring said media file for compliance with said usage restrictions during presentation of said contents.

21. The computer readable medium of claim **13** wherein said usage restriction is a copyright restriction or licensing agreement applicable to said media file.

22. The computer readable medium of claim **13** wherein said media file is delivered via a hypertext transfer protocol file delivery.

23. A system for media file usage restriction compliance comprising:

a computer storage medium having instruction stored therein, said instructions when executed causing a computer system to perform media file usage restriction compliance, said instructions comprising:

means for detecting a media player application operable on a client computer system and for presenting contents of a media file; and

means for utilizing a compliance mechanism to control an output of said media file by said media player, said compliance mechanism diverting a commonly used data output pathway of said media player application to a controlled data output pathway monitored by said compliance mechanism after said media player begins to present said contents of said media file, said compliance mechanism utilized to stop or disrupt the playing of said content of said media file at said controlled data output pathway when said playing of said content of said media file is outside of said usage restriction applicable to said media file.

24. The system as recited in claim **23** further comprising:

means for initiating delivery of said media file to said client computer system from a server coupled with said client computer system, said delivery via a hypertext transfer protocol file delivery.

25. The system as recited in claim **23** further comprising:

means for utilizing said media player application to present said contents of said media file, when said media player application complies with said usage restriction.

26. The system as recited in claim **23** further comprising:

means for deactivating said media player application when said media player application does not comply with said usage restriction.

27. The system as recited in claim **23** further comprising:

means for activating a custom media player application coupled with said client computer system when said media player application is deactivated, said custom media player application for enabling said client computer system to comply with said usage restriction.

28. The system as recited in claim **23** further comprising:

means for verifying the integrity of authorization data stored by said client computer system.

29. The system as recited in claim **23** further comprising:

means for initiating installation of a newer version of said compliance mechanism.

30. The system as recited in claim **23** further comprising:

means for detecting an indicator of a header associated with said media file, said indicator for indicating said media file originated from said server.

31. The system as recited in claim **23** further comprising:

means for monitoring said media file for compliance with said usage restriction during presentation of said contents.

32. The system as recited in claim **23** wherein said usage restriction is a copyright restriction or a license agreement pertaining to said media file.

* * * * *

EXHIBIT B

US007316033B2

(12) United States Patent

Risan et al.

(10) Patent No.: US 7,316,033 B2
(45) Date of Patent: Jan. 1, 2008

(54) **METHOD OF CONTROLLING RECORDING OF MEDIA**

(75) Inventors: **Hank Risan**, Santa Cruz, CA (US); **Edward Vincent Fitzgerald**, Santa Cruz, CA (US)

(73) Assignee: **Music Public Broadcasting, Inc.**, Santa Cruz, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 787 days.

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Related U.S. Application Data

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H04L 9/00 (2006.01)
G06F 15/16 (2006.01)

(52) **U.S. Cl.** **726/33**; 705/57; 709/231; 713/165; 726/30

(58) **Field of Classification Search** 709/231; 726/30; 705/57; 713/165, 193
See application file for complete search history.

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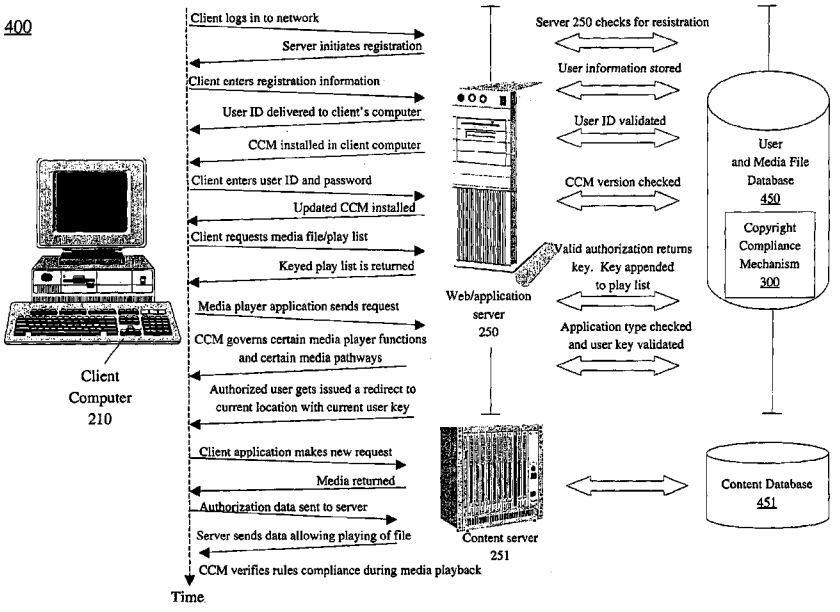
Assistant Examiner—Laurel Lashley

(57) **ABSTRACT**

A method of preventing unauthorized recording of electronic media is described. The method is comprised of activating a compliance mechanism in response to receiving media content by a client system. The compliance mechanism is coupled to the client system. The media content presentation application is operable and coupled to the compliance mechanism. The method is further comprised of controlling a data output path of the client computer with the compliance mechanism. The method is further comprised of directing the media content via the data output path to a custom media device for selectively restricting output of the media content. The custom media device is coupled to the compliance mechanism and to the media content presentation application. The method is further comprised of preventing a recording application coupled to the client computer system from recording the media content file when recording violates usage restriction applicable to the media content.

27 Claims, 12 Drawing Sheets



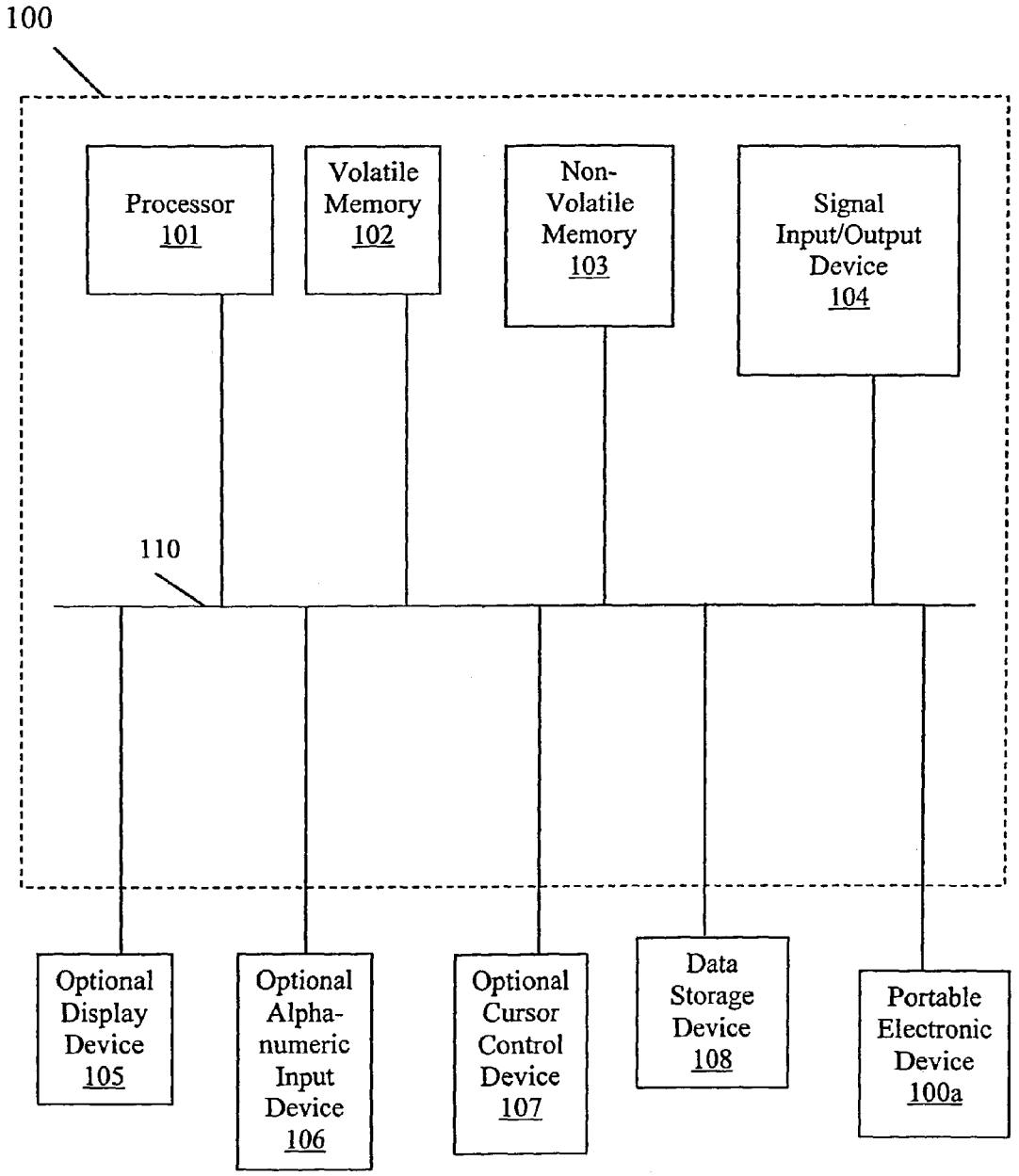

100
Processor
101
Volatile
Memory
102
Non-
Volatile
Memory
103
Signal
Input/Output
Device
104
110
Optional
Display
Device
105
Optional
Alpha-
numeric
Input
Device
106
Optional
Cursor
Control
Device
107
Data
Storage
Device
108
Portable
Electronic
Device
100a

FIGURE 1

200

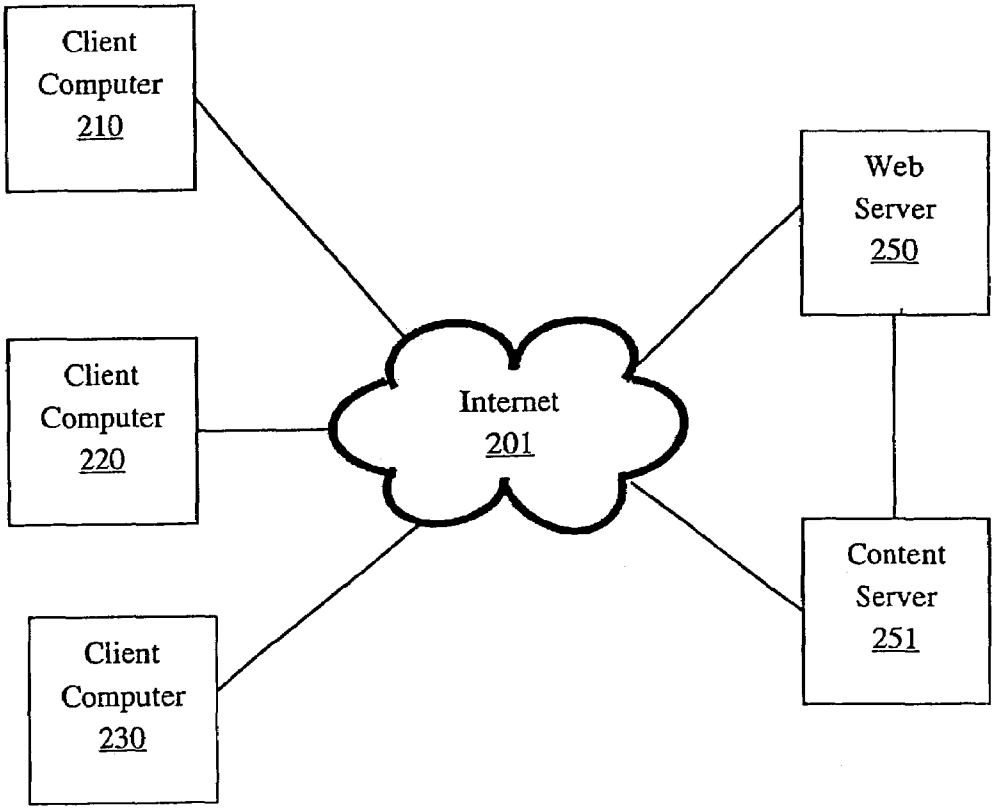

Client Computer 210
Client Computer 220
Client Computer 230
Internet 201
Web Server 250
Content Server 251

FIGURE 2

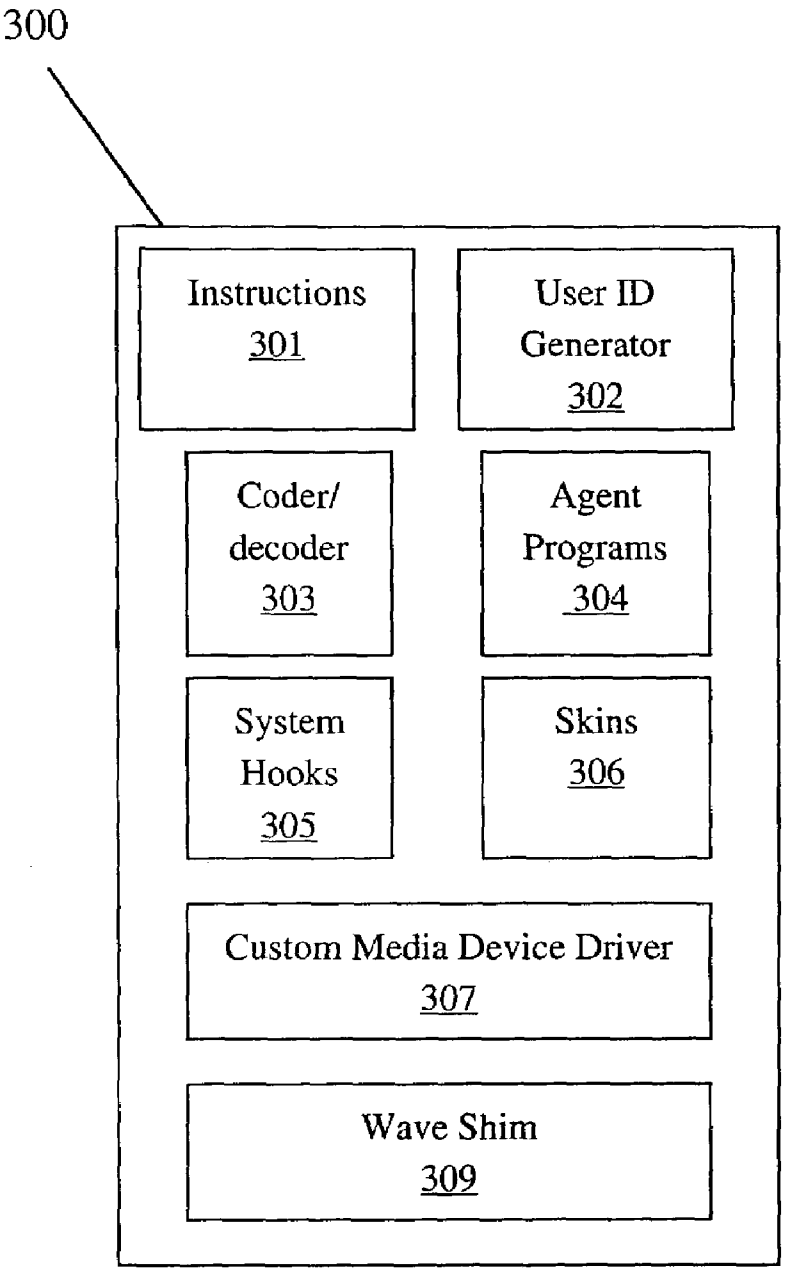

300
Instructions
301
User ID
Generator
302
Coder/
decoder
303
Agent
Programs
304
System
Hooks
305
Skins
306
Custom Media Device Driver
307
Wave Shim
309

FIGURE 3

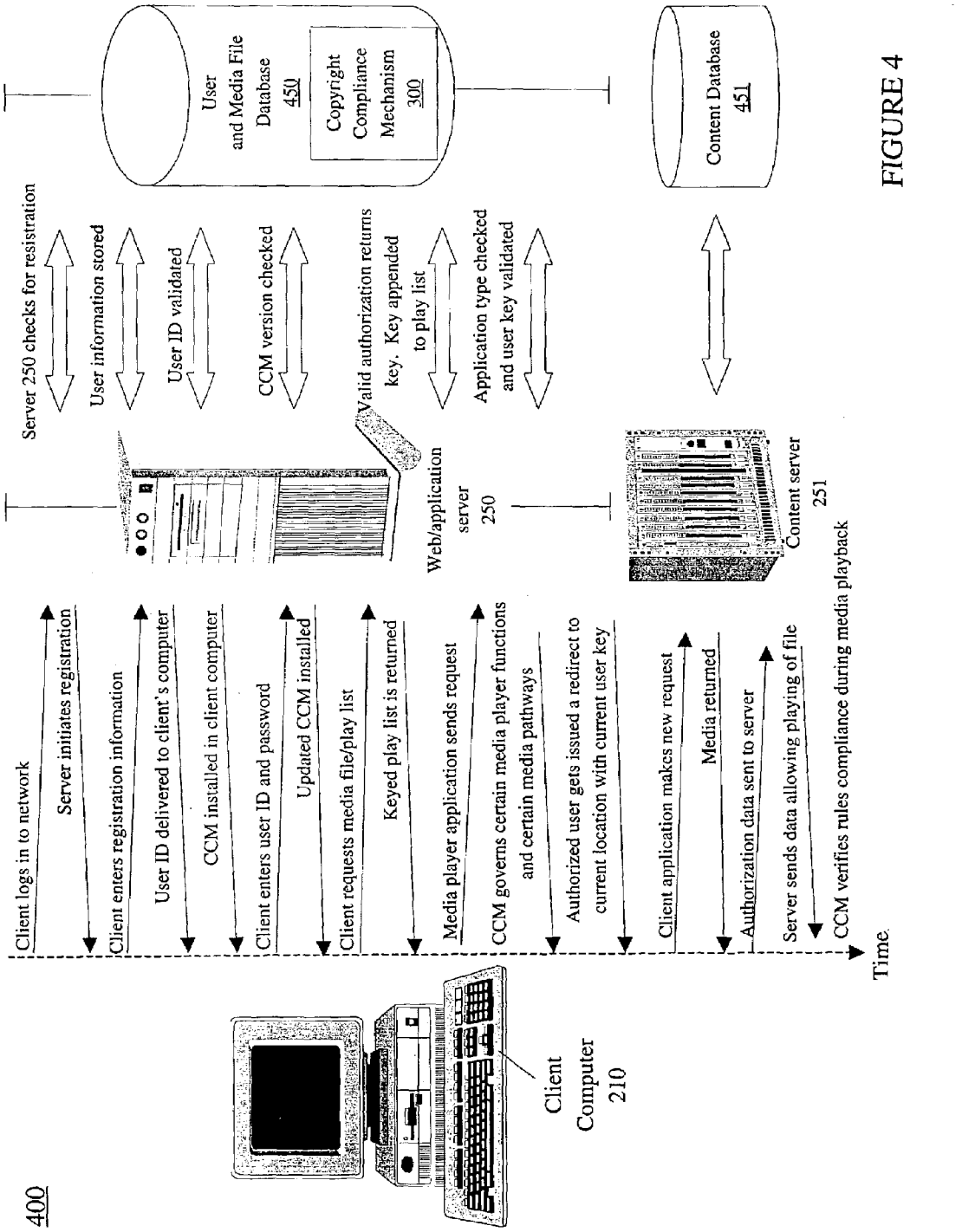

400
Client Computer 210
Time
Client logs in to network
Server initiates registration
Client enters registration information
User ID delivered to client's computer
CCM installed in client computer
Client enters user ID and password
Updated CCM installed
Client requests media file/play list
Keyed play list is returned
Media player application sends request
CCM governs certain media player functions and certain media pathways
Authorized user gets issued a redirect to current location with current user key
Client application makes new request
Media returned
Authorization data sent to server
Server sends data allowing playing of file
CCM verifies rules compliance during media playback
Web/application server 250
Content server 251
Server 250 checks for resistration
User information stored
User ID validated
CCM version checked
Valid authorization returns key. Key appended to play list
Application type checked and user key validated
User and Media File Database 450
Copyright Compliance Mechanism 300
Content Database 451

FIGURE 4

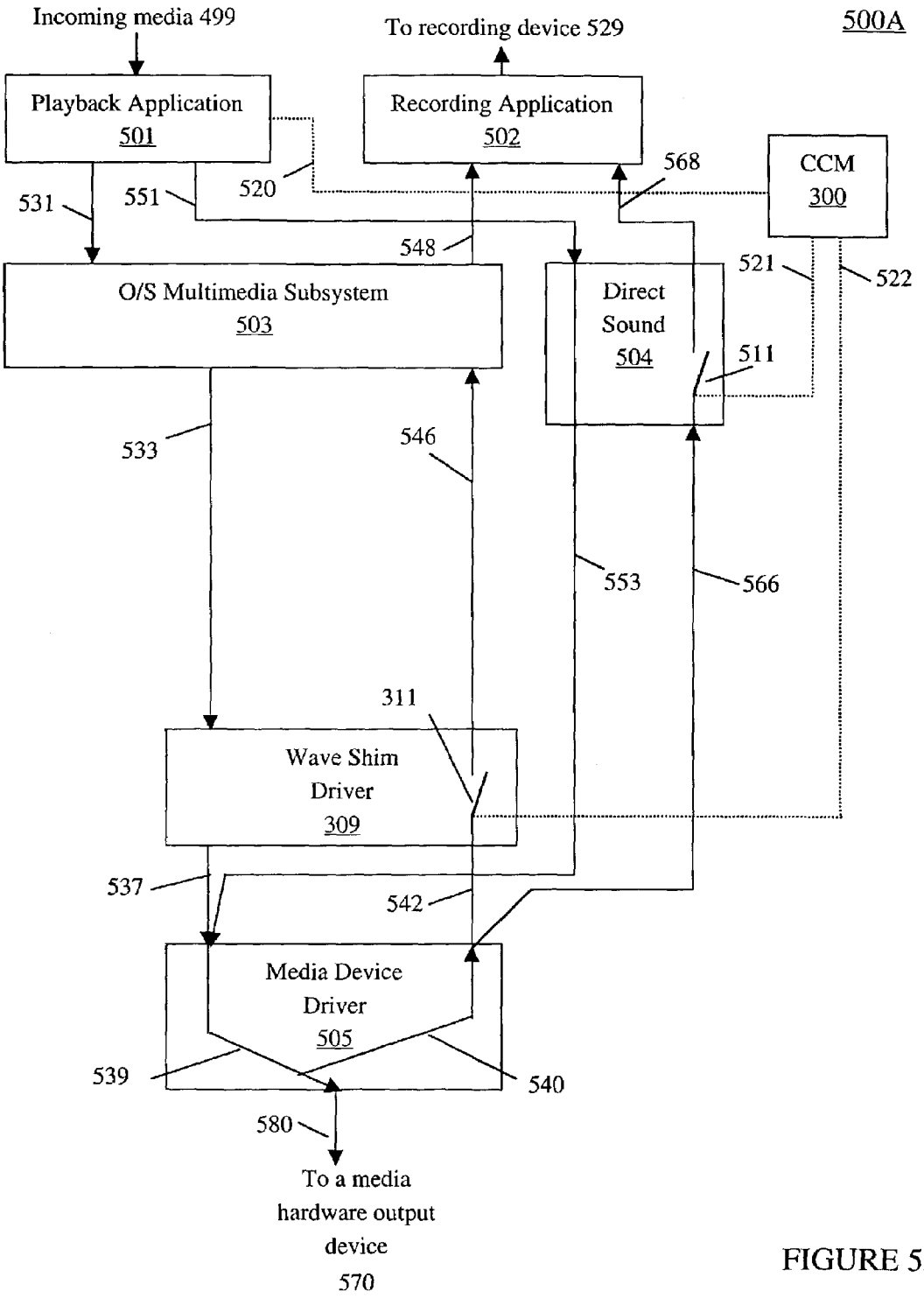

Incoming media 499
To recording device 529
500A
Playback Application
501
Recording Application
502
CCM
300
568
520
531
551
548
521
522
O/S Multimedia Subsystem
503
Direct
Sound
504
511
533
546
553
566
311
Wave Shim
Driver
309
537
542
Media Device
Driver
505
539
540
580
To a media
hardware output
device
570

FIGURE 5A

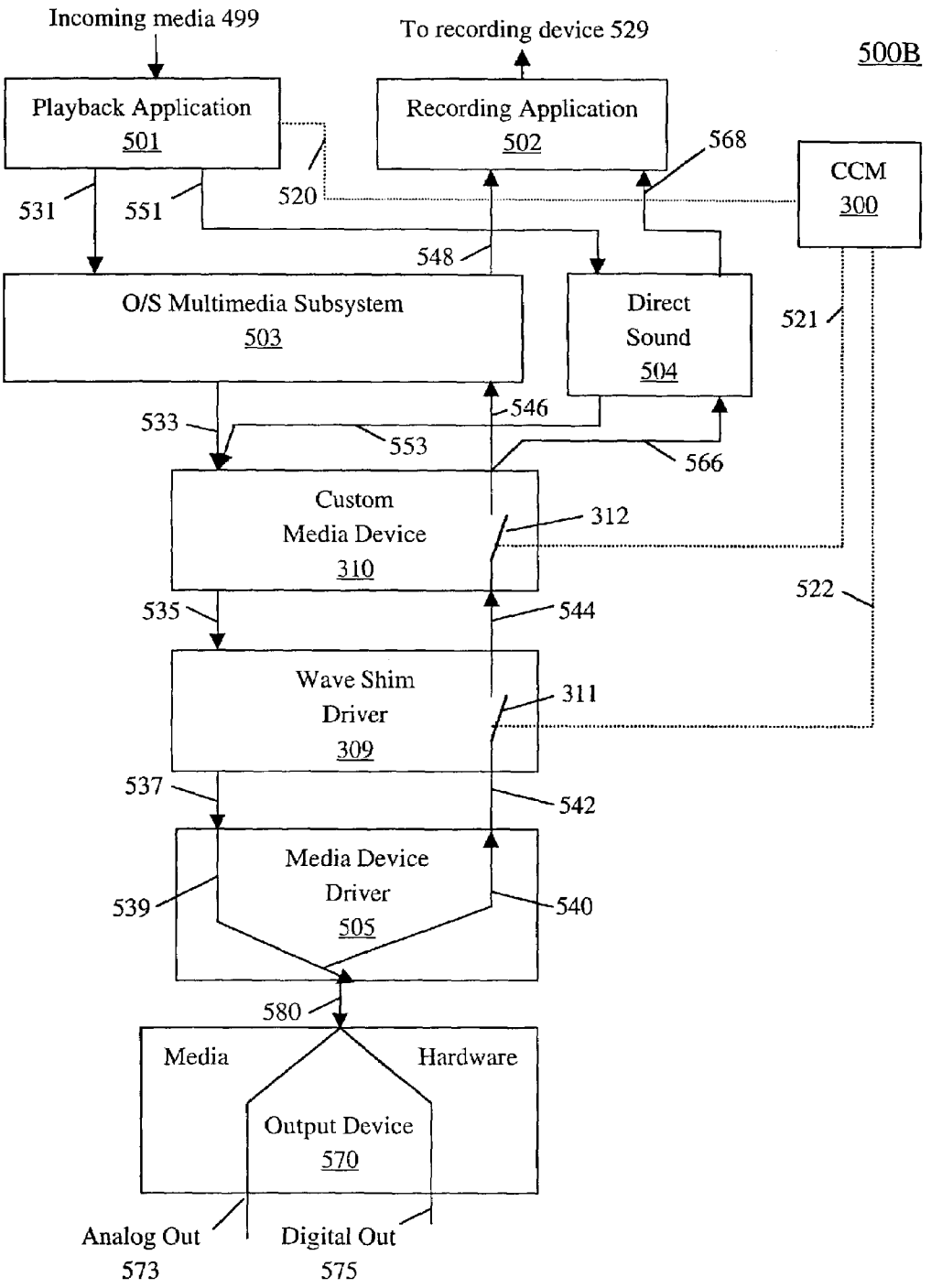

Incoming media 499
To recording device 529
500B
Playback Application
501
Recording Application
502
568
CCM
300
531
551
520
548
O/S Multimedia Subsystem
503
Direct
Sound
504
521
533
553
546
566
Custom
Media Device
310
312
522
535
544
Wave Shim
Driver
309
311
537
542
Media Device
Driver
505
539
540
580
Media
Hardware
Output Device
570
Analog Out
573
Digital Out
575

FIGURE 5B

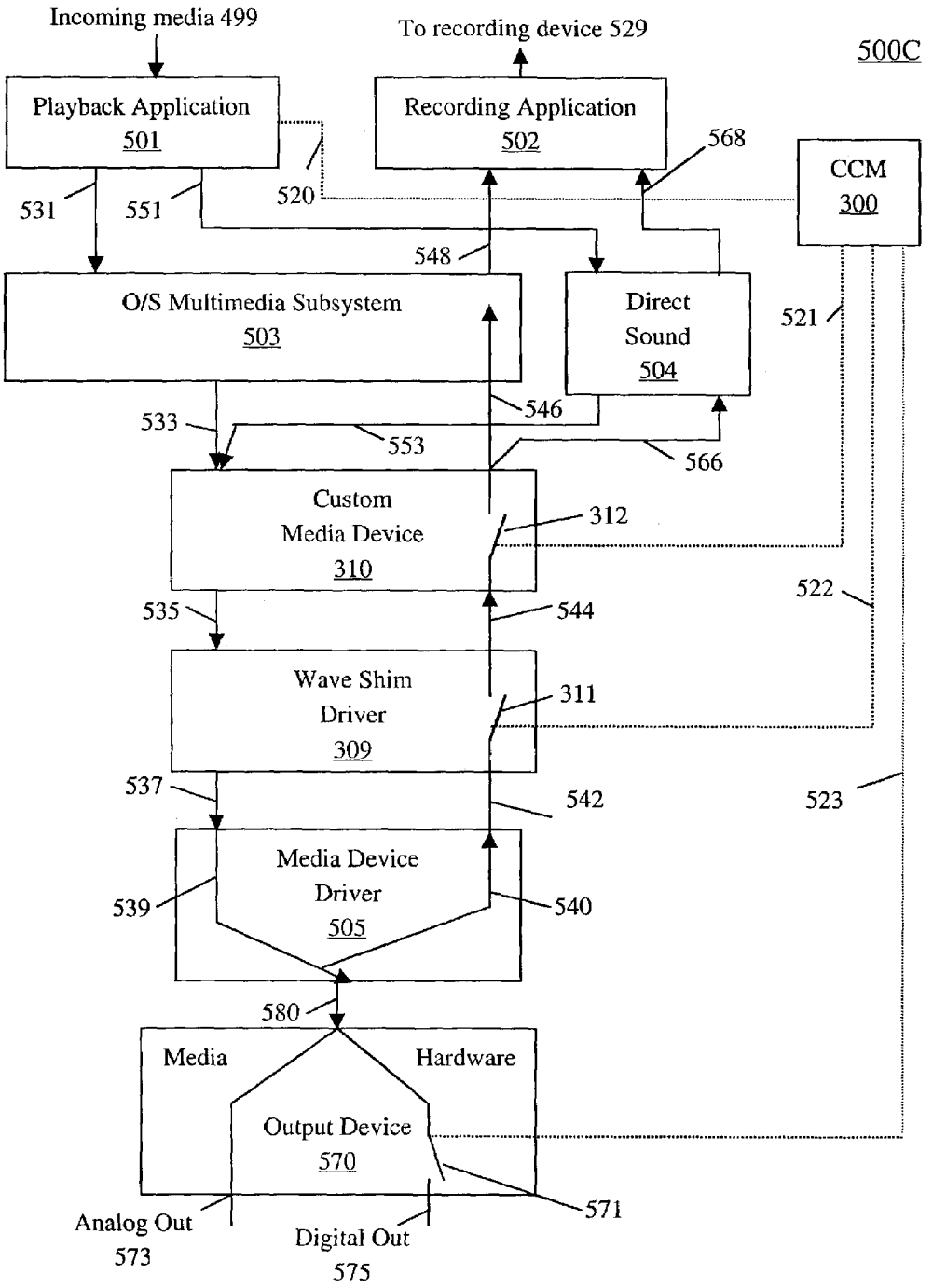

Incoming media 499
To recording device 529
500C
Playback Application
501
Recording Application
502
568
CCM
300
531
551
520
548
O/S Multimedia Subsystem
503
Direct
Sound
504
521
533
546
553
566
Custom
Media Device
310
312
522
535
544
Wave Shim
Driver
309
311
537
542
523
Media Device
Driver
505
539
540
580
Media
Hardware
Output Device
570
571
Analog Out
573
Digital Out
575

FIGURE 5C

600

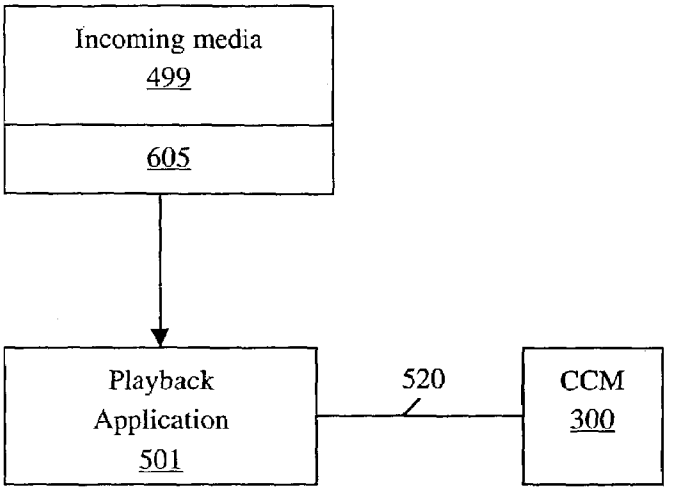


FIGURE 6A

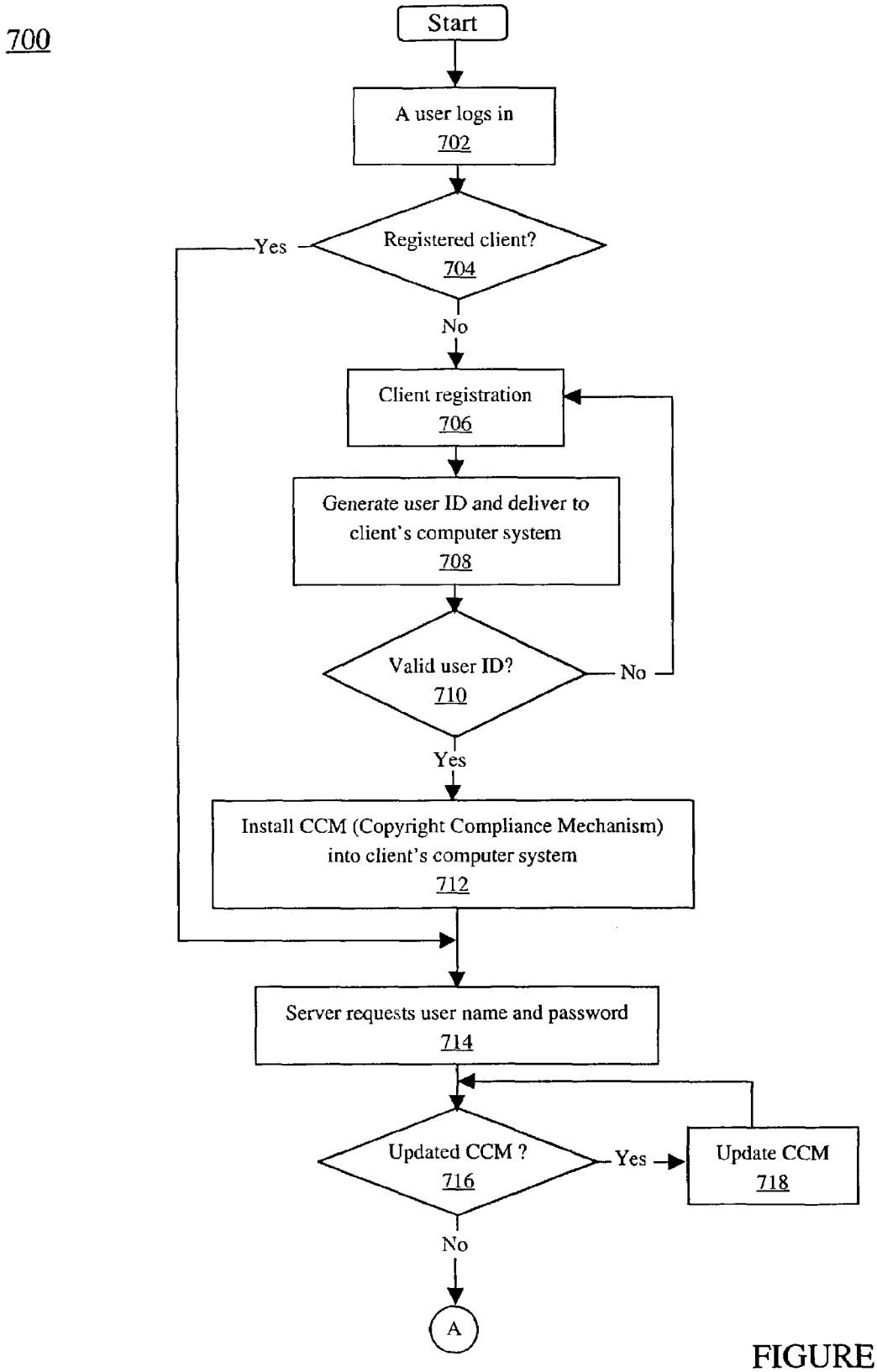

700
Start
A user logs in
702
Registered client?
704
Yes
No
Client registration
706
Generate user ID and deliver to client's computer system
708
Valid user ID?
710
No
Yes
Install CCM (Copyright Compliance Mechanism) into client's computer system
712
Server requests user name and password
714
Updated CCM ?
716
Yes
Update CCM
718
No
A

FIGURE 7A

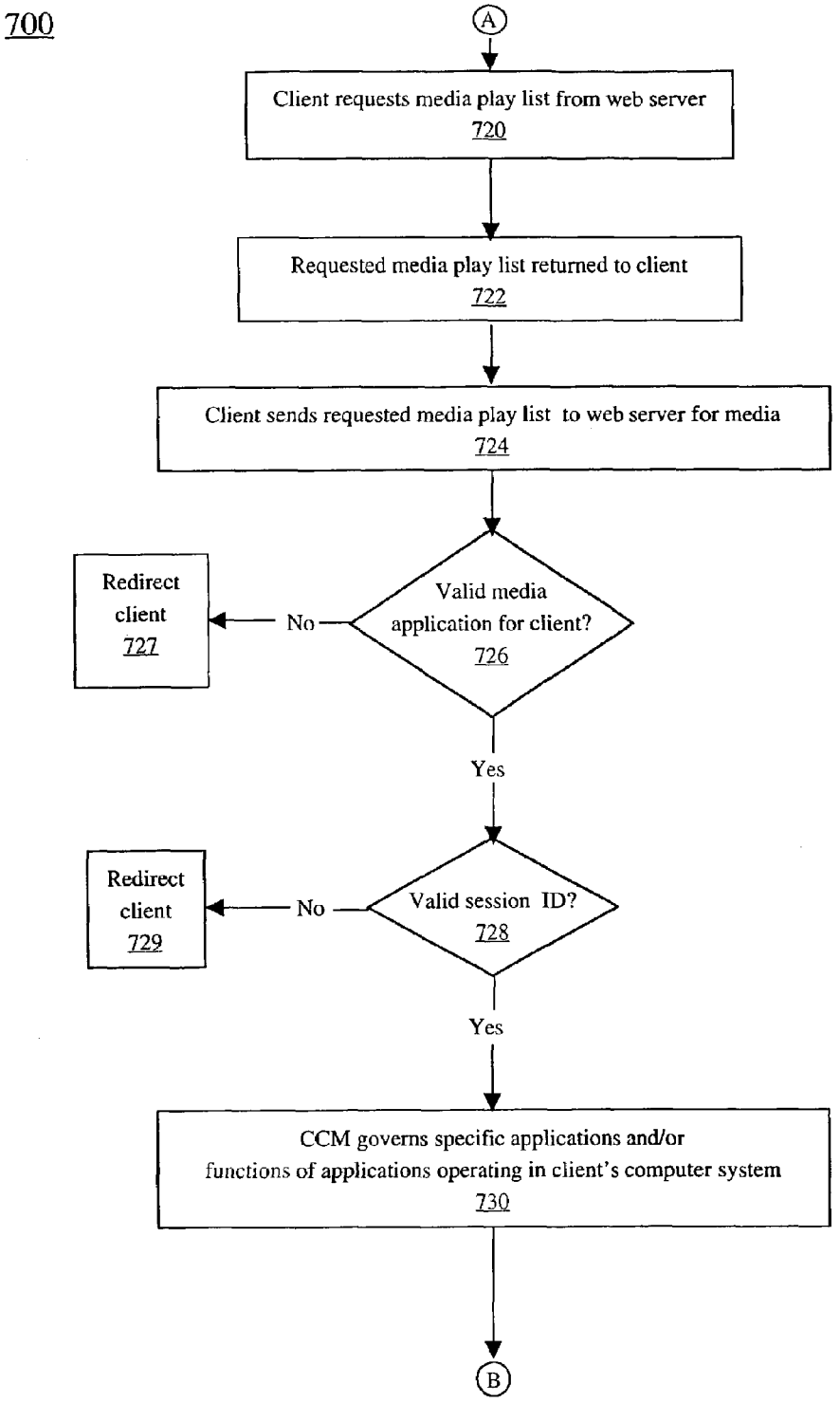

700
A
Client requests media play list from web server
720
Requested media play list returned to client
722
Client sends requested media play list to web server for media
724
Valid media application for client?
726
No
Redirect client
727
Yes
Valid session ID?
728
No
Redirect client
729
Yes
CCM governs specific applications and/or functions of applications operating in client's computer system
730
B

FIGURE 7B

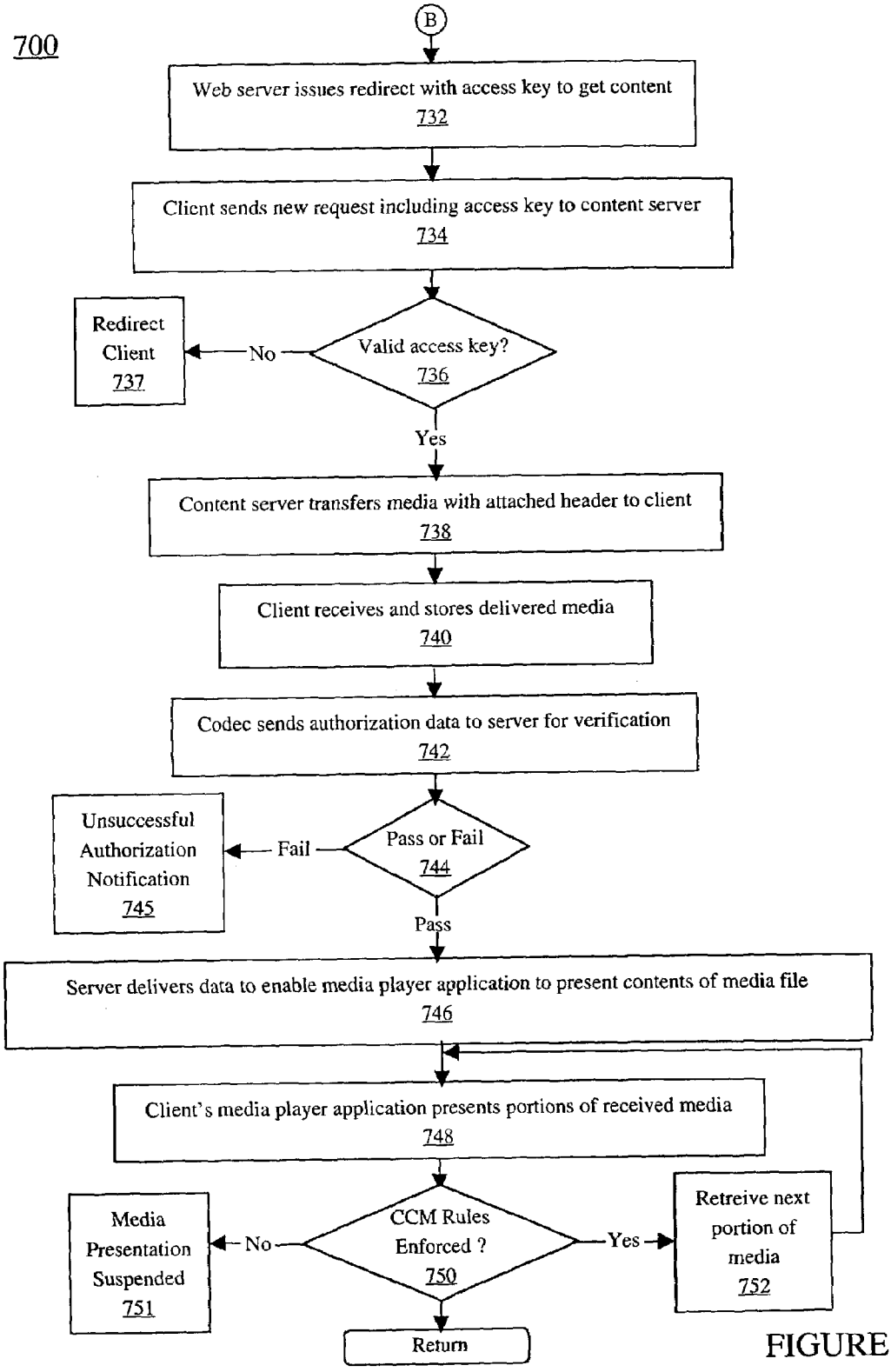

700
B
Web server issues redirect with access key to get content
732
Client sends new request including access key to content server
734
Valid access key?
736
No
Redirect Client
737
Yes
Content server transfers media with attached header to client
738
Client receives and stores delivered media
740
Codec sends authorization data to server for verification
742
Pass or Fail
744
Fail
Unsuccessful Authorization Notification
745
Pass
Server delivers data to enable media player application to present contents of media file
746
Client's media player application presents portions of received media
748
CCM Rules Enforced ?
750
No
Media Presentation Suspended
751
Yes
Retreive next portion of media
752
Return

FIGURE 7C

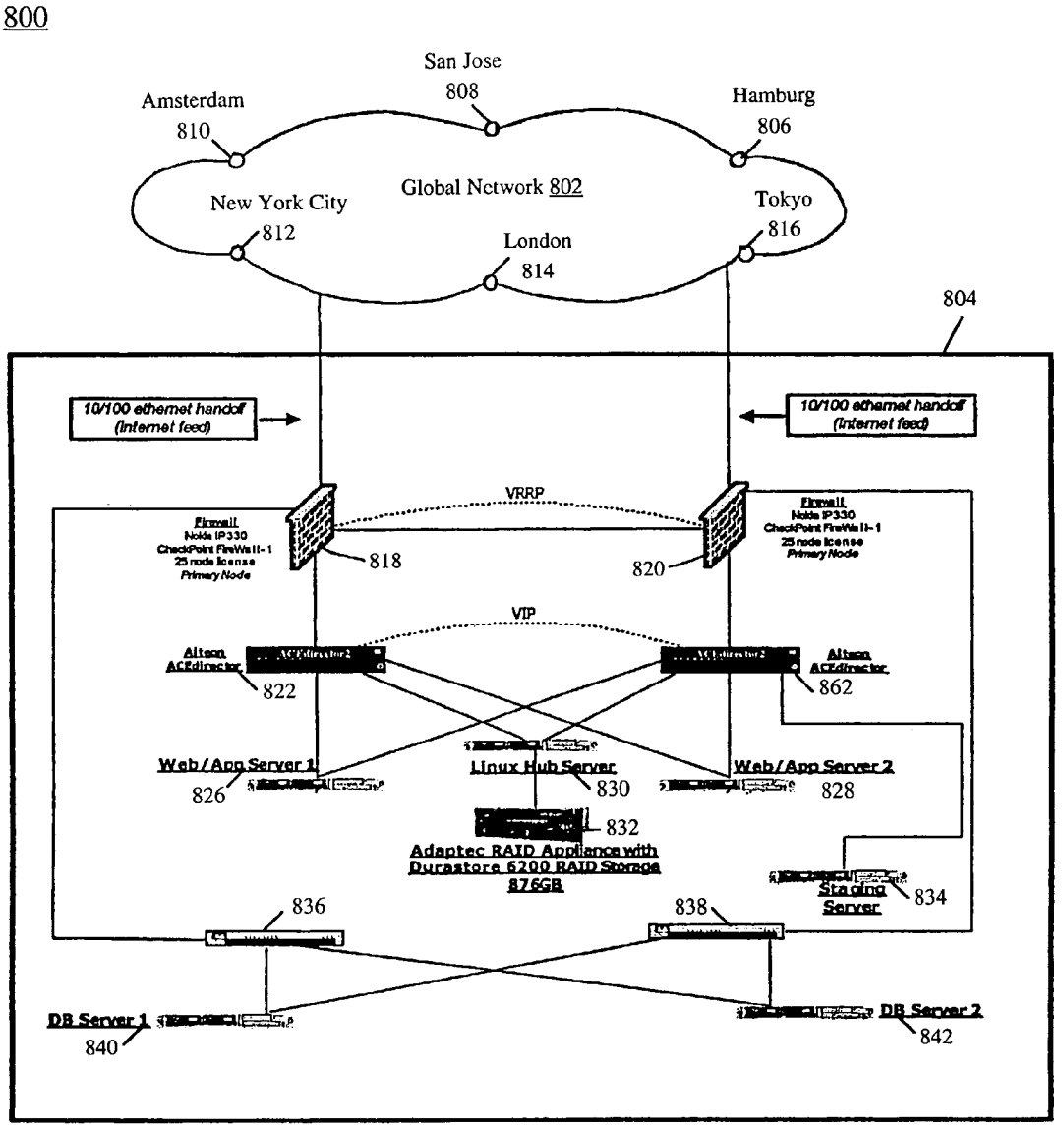

800
San Jose
808
Amsterdam
810
Hamburg
806
Global Network 802
New York City
812
Tokyo
816
London
814
804
10/100 ethernet handoff (Internet feed)
10/100 ethernet handoff (Internet feed)
VRRP
Firewall
Nokia IP330
CheckPoint FireWall-1
25 node license
Primary Node
818
820
VIP
Alteon ACEdirector
822
862
Web/App Server 1
826
Linux Hub Server
830
Web/App Server 2
828
832
Adaptec RAID Appliance with Durastore 6200 RAID Storage 876GB
Staging Server
834
836
838
DB Server 1
840
DB Server 2
842

FIGURE 8

METHOD OF CONTROLLING RECORDING OF MEDIA

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of co-pending U.S. patent application Ser. No. 10/304,390, entitled "CONTROLLING INTERACTION OF DELIVERABLE ELECTRONIC MEDIA" by Hank Risan, et al., filed Nov. 25, 2002, assigned to the assignee of the present invention, and which is hereby incorporated by reference.

FIELD OF THE INVENTION

The present invention relates to the recording of electronic media. More particularly, the present invention relates to preventing unauthorized recording of electronic media.

BACKGROUND OF THE INVENTION

With advancements in hardware and software technology, computers are integral tools utilized in various applications, such as finance, CAD (computer aided design), manufacturing, health care, telecommunication, education, etc. Further, an enhancement in computer functionality can be realized by communicatively coupling computers together to form a network. Within a network environment, computer systems enable users to exchange files, share information stored in common databases, combine or pool resources, communicate via electronic mail (e-mail), and access information on the Internet. Additionally, computers connected to a network environment, e.g., the Internet, provide their users access to data and information from all over the world.

Some of the various types of data that a user can access and share include, but are not limited to, text data such as that found in a word document, graphical data such as that found in pictures, e.g., JPEGs, GIFs, TIFFs, audio data such as that found in music files, e.g., MP3 files, and video data such as that found in moving pictures files, e.g., MPEG, MOV, and AVI files, to name a few. In fact, nearly any type of data can be stored and shared with other computer systems. In many instances, the material contained within the various data types is copyrighted material.

There are many different types of network environments that can be implemented to facilitate sharing of data between computer systems. Some of the various network environment types include Ethernet, client-server, and wired and/or wireless network environments. A common utilization of a network environment type is for file sharing, such as in a P2P network or point-to-point network. Most P2P networks rely on business models based upon the transfer and redistribution of copyrighted material, e.g., audio files, between computers coupled to a network, e.g., the Internet. A P2P network allows a user to acquire the copyrighted material from a computer, a web site source, or a music broadcaster, and store and share the material with other users throughout the network, in some instances acting as a web site source or a music broadcaster.

It is also common for users sharing media files in an uncontrolled manner to use freely distributed or commercially available media player applications to experience, e.g., listen, view, and/or watch, the shared files. In many instances, these media player applications also provide for downloading the media file from a P2P network or from licensed web broadcasters, saving it locally, and then upload the media file onto an unlawful P2P or similar network and/or consumer recording devices. Unlawfully saving/recording a media file can be as simple as selecting the save or record function on a media player application.

Additionally, many of the computers, web sites, and web broadcasters that share copyrighted material commonly do not control or monitor the files being exchanged between computers. Additionally, when web sites attempt to control or restrict the distribution of copyrighted material, e.g., audio files, users seeking to circumvent controls or restrictions can, in many cases, simply utilize the recording functionality of a media player application and save the copyrighted material, rename the particular audio file, and upload the renamed file, rendering attempts to control or restrict its distribution moot.

Further, many of the media player/recorder applications are designed to capture and record incoming media files in a manner that circumvents controls implemented by a media player application inherent to an operating system, e.g., QuickTime for Apple, MediaPlayer for Windows™, etc., or one downloadable from the Internet, e.g., RealPlayer, LiquidAudio, or those provided by webcasters, e.g., PressPlay, for controlling unauthorized recording of media files. Additionally, many digital recording devices, e.g., mini-disc recorders, MP3 recorders, and the like, can be coupled to a digital output of a computer system to capture the media file.

It is desired to prevent persons from making unauthorized copies of copyrighted material through some available network, e.g., wireline, wireless, P2P, etc., or through a communicative coupling. It is further desirable to prevent persons from making unauthorized copies of media files from or to alternative sources, e.g., CD players, DVD players, removable hard drives, personal electronic and/or recording devices, e.g., MP3 recorders, and the like.

Current methods of sharing media files do not provide adequate protection against unauthorized recording of the media files.

SUMMARY OF THE INVENTION

Accordingly, a need exists for a method that prevents unauthorized recording of media files. Further, a need exists for a method that selectively prevents unauthorized recording of media files. Embodiments of the present invention satisfy the above mentioned needs.

In one embodiment, a method of preventing unauthorized recording of electronic media is comprised of activating a compliance mechanism in response to receiving media content by a client system. The compliance mechanism is coupled to the client system. The media content presentation application is operable and coupled to the compliance mechanism. The method is further comprised of controlling a data output path of the client computer with the compliance mechanism. The method is further comprised of directing the media content via the data output path to a custom media device for selectively restricting output of the media content. The custom media device is coupled to the compliance mechanism and to the media content presentation application. The method is further comprised of preventing a recording application coupled to the client computer system from recording the media content file when recording violates usage restriction applicable to the media content.

In another embodiment, the present invention provides computer implementable instructions stored on a computer readable medium, the instructions for causing a client system to perform a method of restricting recording of media content. The present method is comprised of animating a

compliance mechanism coupled to the client system. The animating is in response to the client system receiving media content. The client system has a media content presentation application coupled thereto and operable with the compliance mechanism. The present method is further comprised of managing an output path of the client computer with the compliance mechanism. The present method is further comprised of governing said media content to a custom media device via the output path to a custom media device for selectively restricting output of said media content.

In another embodiment, the present invention provides a method for restricting recording of media files comprising means for activating a compliance mechanism to control a data output path of a client system. The activating is in response to said client system receiving media content. The compliance mechanism is coupled to the client system and operable in conjunction with a media content presentation application coupled to the client system and operable thereon. The present method further comprises means for directing the media content to a custom media device via said data output path controlled by said compliance mechanism, for selectively restricting output of said media content.

These and other objects and advantages of the present invention will no doubt become obvious to those of ordinary skill in the art after having read the following detailed description of the preferred embodiments which are illustrated in the various drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and form a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

FIG. **1** is a block diagram of an exemplary computer system that can be utilized in accordance with an embodiment of the present invention.

FIG. **2** is a block diagram of an exemplary network environment that can be utilized in accordance with an embodiment of the present invention.

FIG. **3** is a block diagram of various exemplary functional components of a copyright compliance mechanism in accordance with an embodiment of the present invention.

FIG. **4** is an illustration of an exemplary system for implementing a copyright compliance mechanism in accordance with an embodiment of the present invention.

FIG. **5**A is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized recording of media files, in accordance with one embodiment of the present invention.

FIG. **5**B is a data flow block diagram showing an implementation of a component of a copyright compliance mechanism for preventing unauthorized recording of media files, in accordance with another embodiment of the present invention.

FIG. **5**C is a data flow block diagram showing an implementation of copyright compliance mechanism for preventing unauthorized output of media files, in accordance with one embodiment of the present invention.

FIG. **6**A is a block diagram of an environment for preventing unauthorized copying of a media file, in accordance with one embodiment of the present invention.

FIGS. **7**A, **7**B, and **7**C are a flowchart of steps performed in accordance with an embodiment of the present invention for providing a copyright compliance mechanism to a network of client and server computer systems.

FIG. **8** is a diagram of an exemplary global media delivery system in which a copyright compliance mechanism can be implemented in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION

Reference will now be made in detail to embodiments of the invention, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with embodiments, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternatives, modifications, and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims. Furthermore, in the following detailed description of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, to one of ordinary skill in the art, the present invention may be practiced without these specific details. In other instances, well known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of the present invention.

Some portions of the detailed description which follows are presented in terms of procedures, logic blocks, processing, and other symbolic representations of operations on data bits within a computing system or digital memory system. These descriptions and representations are the means used by those skilled in the data processing art to most effectively convey the substance of their work to others skilled in the art. A procedure, logic block, process, etc., is herein, and generally, conceived to be a self-consistent sequence of steps or instructions leading to a desired result. The steps are those involving physical manipulations of physical quantities. Usually, though not necessarily, these physical manipulations take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated in a computing system or similar electronic computing device. For reasons of convenience, and with reference to common usage, these signals are referred to as bits, values, elements, symbols, characters, terms, numbers, or the like, with reference to the present invention.

It should be borne in mind, however, that all of these terms are to be interpreted as referencing physical manipulations and quantities and are merely convenient labels and are to be interpreted further in view of terms commonly used in the art. Unless specifically stated otherwise as apparent from the following discussions, it is understood that discussions of the present invention refer to actions and processes of a computing system, or similar electronic computing device that manipulates and transforms data. The data is represented as physical (electronic) quantities within the computing system's registers and memories and is transformed into other data similarly represented as physical quantities within the computing system's memories or registers, or other such information storage, transmission, or display devices.

In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. To one skilled in the art, the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to avoid obscuring the present invention.

Embodiments of the present invention are discussed primarily in the context of a network of computer systems such as a network of desktop, workstation, laptop, handheld, and/or other portable electronic device. For purposes of the present application, the term "portable electronic device" is not intended to be limited solely to conventional handheld or portable computers. Instead, the term "portable electronic device" is also intended to include many mobile electronic devices. Such mobile devices include, but are not limited to, portable CD players, MP3 players, mobile phones, portable recording devices, and other personal digital devices.

FIG. **1** is a block diagram illustrating an exemplary computer system **100** that can be used in accordance with an embodiment of the present invention. It is noted that computer system **100** can be nearly any type of computing system or electronic computing device including, but not limited to, a server computer, a desktop computer, a laptop computer, or other portable electronic device. Within the context of the present invention, certain discussed processes, procedures, and steps are realized as a series of instructions (e.g., a software program) that reside within computer system memory units of computer system **100** and which are executed by a processor(s) of computer system **100**, in one embodiment. When executed, the instructions cause computer system **100** to perform specific actions and exhibit specific behavior which is described in detail herein.

Computer system **100** of FIG. **1** comprises an address/data bus **100** for communicating information, one or more central processors **101** coupled to bus **110** for processing information and instructions. Central processor(s) **101** can be a microprocessor or any alternative type of processor. Computer system **100** also includes a computer usable volatile memory **102**, e.g., random access memory (RAM), static RAM (SRAM), dynamic RAM (DRAM), synchronous dynamic RAM (SDRAM), double data rate RAM (DDR RAM), etc., coupled to bus **110** for storing information and instructions for processor(s) **101**. Computer system **100** further includes a computer usable non-volatile memory **103**, e.g., read only memory (ROM), programmable ROM, electronically programmable ROM (EPROM), electrically erasable ROM (EEPROM), flash memory (a type of EEPROM), etc., coupled to bus **110** for storing static information and instructions for processor(s) **101**. In one embodiment, non-volatile memory **103** can be removable.

System **100** also includes one or more signal generating and receiving devices, e.g., signal input/output device(s) **104** coupled to bus **110** for enabling computer **100** to interface with other electronic devices. Communication interface **104** can include wired and/or wireless communication functionality. For example, in one embodiment, communication interface **104** is a serial communication port, but can alternatively be one of a number of well known communication standards and protocols, e.g., a parallel port, an Ethernet adapter, a FireWire (IEEE 1394) interface, a Universal Serial Bus (USB), a small computer system interface (SCSI), an infrared (IR) communication port, a Bluetooth wireless communication adapter, a broadband connection, a satellite link, an Internet feed, a cable modem, and the like. In another embodiment, a digital subscriber line (DSL) can be implemented as signal input/output device **104**. In such an instance, communication interface **104** may include a DSL modem.

Computer **100** of FIG. **1** can also include one or more computer usable data storage device(s) **108** coupled to bus **110** for storing instructions and information, in one embodiment of the present invention. In one embodiment, data storage device **108** can be a magnetic storage device, e.g., a hard disk drive, a floppy disk drive, a zip drive, or other magnetic storage device. In another embodiment, data storage device **108** can be an optical storage device, e.g., a CD (compact disc), a DVD (digital versatile disc), or other alternative optical storage device. Alternatively, any combination of magnetic, optical, and alternative storage devices can be implemented, e.g., a RAID (random array of independent disks or random array of inexpensive discs) configuration. It is noted that data storage device **108** can be located internal and/or external of system **100** and communicatively coupled with system **100** utilizing wired and/or wireless communication technology, thereby providing expanded storage and functionality to system **100**. It is further noted that nearly any portable electronic device, e.g., device **100***a*, can also be communicatively coupled with system **100** via utilization of wired and/or wireless technology, thereby expanding the functionality of system **100**.

System **100** can also include an optional display device **105** coupled to bus **110** for displaying video, graphics, and/or alphanumeric characters. It is noted that display device **105** can be a CRT (cathode ray tube), a thin CRT (TCRT), a liquid crystal display (LCD), a plasma display, a field emission display (FED) or any other display device suitable for displaying video, graphics, and alphanumeric characters recognizable to a user.

Computer system **100** of FIG. **1** further includes an optional alphanumeric input device **106** coupled to bus **110** for communicating information and command selections to processor(s) **101**, in one embodiment. Alphanumeric input device **106** is coupled to bus **110** and includes alphanumeric and function keys. Also included in computer **100** is an optional cursor control device **107** coupled to bus **110** for communicating user input information and command selections to processor(s) **101**. Cursor control device **107** can be implemented using a number of well known devices such as a mouse, a trackball, a track pad, a joy stick, a optical tracking device, a touch screen, etc. It is noted that a cursor can be directed and/or activated via input from alphanumeric input device **106** using special keys and key sequence commands. It is further noted that directing and/or activating the cursor can be accomplished by alternative means, e.g., voice activated commands, provided computer system **100** is configured with such functionality.

FIG. **2** is a block diagram of an exemplary network **200** in which embodiments of the present invention may be implemented. In one example, network **200** enables one or more authorized client computer systems (e.g., **210**, **220**, and **230**), each of which are coupled to Internet **201**, to receive media content from a media content server, e.g., **251**, via the Internet **201** while preventing unauthorized client computer systems from accessing media stored in a database of content server **251**.

Network **200** includes a web server **250** and a content server **251** which are communicatively coupled to Internet **201**. Further, web server **250** and content server **251** can be communicatively coupled without utilizing Internet **201**, as shown. Web server **250**, content server **251**, and client computers **210**, **220**, and **230** can communicate with each other. It is noted that computers and servers of network **200** are well suited to be communicatively coupled in various implementations. For example, web server **250**, content server **251**, and client computer systems **210**, **220**, and **230** of network **200** can be communicatively coupled via wired communication technology, e.g., twisted pair cabling, fiber optics, coaxial cable, etc., or wireless communication technology, or a combination of wired and wireless communication technology.

Still referring to FIG. **2**, it is noted that web server **250**, content server **251**, and client computer systems **210**, **220** and **230** of network **200** can, in one embodiment, be each implemented in a manner similar to computer system **100** of FIG. **1**. However, the server and computer systems in network **200** are not limited to such implementation. Additionally, web server **250** and content server **251** can perform various functionalities within network **200**. It is also noted that, in one embodiment, web server **250** and content server **251** can both be disposed on a single or a plurality of physical computer systems, e.g., computer system **100** of FIG. **1**.

Further, it is noted that network **200** can operate with and deliver any type of media content, (e.g., audio, video, multimedia, graphics, information, data, software programs, etc.) in any format. In one example, content server **251** can provide audio and video files to client computers **210**-**230** via Internet **201**.

FIG. **3** is a block diagram of an exemplary copyright compliance mechanism (CCM) **300** of, access to, and/or copyright compliance of media files, in accordance with an embodiment of the present invention. In one embodiment, CCM **300** contains one or more software components and instructions for enabling compliance with DMCA (digital millennium copyright act) restrictions and/or RIAA (recording industry association of America) licensing agreements regarding media files. In one embodiment, CCM **300** may be integrated into existing and/or newly developed media player and recorder applications. In another embodiment, CCM **300** may be implemented as stand alone but in conjunction with existing media player/recorder applications, such that CCM **300** is communicatively coupled to existing media player/recorder applications.

There are currently two types of copyright licenses recognized by the DMCA for the protection of broadcasted copyrighted material. One of the broadcast copyright licenses is a compulsory license, also referred to as a statutory license. A statutory license is defined as a non-interactive license, meaning the user cannot select the song. Further, a caveat of this type of broadcast license is that a user must not be able to select a particular music file for the purpose of recording it to the user's computer system or other storage device. Another caveat of a statutory license is that a media file is not available more than once for a given period of time. In one example, the period of time can be three hours.

The other type of broadcast license recognized by the DMCA is an interactive licensing agreement. An interactive licensing agreement is commonly with the copyright holder, e.g., a record company, the artist, where the copyright holder grants permission for a server, e.g., web server **250** and/or content server **251** of FIG. **2** to broadcast copyrighted material. Under an interactive licensing agreement, there are a variety of ways that copyrighted material, e.g., music files, can be broadcast. For example, one manner in which music files can be broadcast is to allow the user to select and listen to a particular sound recording, but without the user enabled to make a sound recording. This is commonly referred to as an interactive with "no save" license, meaning that the end user is unable to save or store the media content file in a relatively permanent manner. Additionally, another manner in which music files can be broadcast is to allow a user to not only select and listen to a particular music file, but additionally allow the user to save that particularly music file to disc and/or bum the music file to CD, MP3 player, or other portable electronic device. This is commonly referred to as an interactive with "save" license, meaning that the end user is enabled to save, store, or burn to CD, the media content file.

It is noted that the DMCA allows for the "perfect" reproduction of the sound recording. A perfect copy of a sound recording is a one-to-one mapping of the original sound recording into a digitized form, such that the perfect copy is virtually indistinguishable and/or has no audible differences from the original recording.

In one embodiment, CCM (copyright compliance mechanism) **300** can be stored in web server **250** and/or content server **251** of network **200** and is configured to be installed into each client computer system, e.g., **210**, **220** and **230**, enabled to access the media files stored within content server **251** and/or web server **250**. Alternatively, copyright compliance mechanism **300** can be externally disposed and communicatively coupled with a client computer system **200** via, e.g., a portable media device **100***a* of FIG. **1**.

Copyright compliance mechanism **300** is configured to be operable while having portions of components, entire components, combinations of components, and/or comp, e.g., **210**, **220**, and/or **230**.

Additionally, portions of components, entire components and/or combinations of components of CCM **300** can be readily updated, e.g., via Internet **201**, to reflect changes or developments in the DMCA, changes or developments in copyright restrictions and/or licensing agreements that pertain to any media file, changes in current media player applications and/or the development of new media player applications, or to counteract subversive and/or hacker-like attempts to unlawfully obtain one or more media files.

Referring to FIG. **3**, in one embodiment, CCM **300** is shown to include instructions **301** for enabling client computer system **210** to interact with web server **250** and content server **251** of network **200**. Instructions **301** enable client computer system **210** to interact with servers, e.g., **250** and **251** in a network, e.g., **200**.

The copyright compliance mechanism **300** also includes, in one embodiment, a user ID generator **302**, for generating a user ID or user key, and one or more cookie(s) which contain(s) information specific to the user and the user's computer system, e.g., **210**. In one embodiment, the user ID and the cookie(s) are installed in computer system **210** prior to installation of the remaining components of the copyright compliance mechanism **300**. It is noted that the presence of a valid cookie(s) and a valid user ID/user key are verified by web server **250** before the remaining components of a CCM **300** can be installed, within one embodiment of the present invention. Additionally, the user ID/user key can contain, but is not limited to, the user's name, the user's address, the user's credit card number, verified email address, and an identity (usemame) and password selected by the user. Furthermore, the cookie can contain, but is not limited to, information specific to the user, information regarding the user's computer system **210**, e.g., types of media applications operational therewithin, a unique identifier associated with computer system **210**, e.g., a MAC (machine address code) address and/or an IP address, and other information specific to the user and the computer system operated by the user. It is noted that the information regarding the client computer system, e.g., **210**, the user of system **210**, and an access key described herein can be collectively referred to as authorization data.

Advantageously, with information regarding the user and the user's computer system, e.g., **210**, web server **250** can determine when a user of one computer system, e.g., **210**, has given their usemame and password to another user using

another computer system, e.g., **220**. Because the username, password, and the user's computer system **210** are closely associated, web server **250** can prevent unauthorized access to copyrighted media content, in one embodiment. It is noted that if web server **250** detects unauthorized sharing of usernames and passwords, it can block the user of computer system **210**, as well as other users who unlawfully obtained the username and password, from future access to copyrighted media content available through web server **250**. Web server **250** can invoke blocking for any specified period of time, e.g., for a matter of minutes or hours to months, years, or longer.

Still referring to FIG. **3**, copyright compliance mechanism **300** further includes one or more coder/decoders (codec) **303** that, in one embodiment, is/are adapted to perform, but is/are not limited to, encoding/decoding of media files, compressing/decompressing of media files, detecting that delivered media files are encrypted as prescribed by CCM **300**. In the present embodiment, coder/decoder **303** can also extract key fields from a header attached to each media content file for, in part, verification that the file originated from a content server, e.g., **251**.

In the present embodiment, coder/decoder **303** can also perform a periodic and repeated check of the media file, while the media file is passed to the media player application, e.g., in a frame by frame basis or in a buffer by buffer basis, to ensure that CCM **300** rules are being enforced at any particular moment during media playback. It is noted that differing coder/decoders **303** can be utilized in conjunction with various types of copyrighted media content including, but not limited to, audio files, video files, graphical files, alphanumeric files and the like, such that any type of media content file can be protected in accordance with embodiments of the present invention.

With reference still to FIG. **3**, copyright compliance mechanism **300** also includes one or more agent programs **304** which are configured to engage in dialogs and negotiate and coordinate transfer of information between a computer system, e.g., **210**, **220**, or **230**, a server, e.g., web server **250** and/or content server **251**, and/or media player applications, with or without recording functionality, that are operable within a client computer system, in one embodiment. In the present embodiment, agent program **304** can also be configured to maintain system state, verify that other components are being utilized simultaneously, to be autonomously functional without knowledge of the client, and can also present messages, e.g., error messages, media information, advertising, etc., via a display window or electronic mail. This enables detection of proper skin implementation and detection of those applications that are running. It is noted that agent programs are well known in the art and can be implemented in a variety of ways in accordance with the present embodiment.

Copyright compliance mechanism **300** also includes one or more system hooks **305**, in one embodiment of the present invention. A system hook **305** is, in one embodiment, a library that is installed in a computer system, e.g., **210**, and intercepts system wide events. For example, a system hook **305**, in conjunction with skins **306**, can govern certain properties and/or functionalities of media player applications operating within the client computer system, e.g., **210**, including, but not limited to, mouse click shortcuts, keyboard shortcuts, standard system accelerators, progress bars, save functions, pause functions, rewind functions, skip track functions, forward track preview, copying to CD, copying to a portable electronic device, and the like.

It is noted that the term govern or governing, for purposes of the present invention, can refer to a disabling, deactivating, enabling, activating, etc., of a property or function. Governing can also refer to an exclusion of that function or property, such that a function or property may be operable but unable to perform in the manner originally intended. For example, during playing of a media file, the progress bar may be selected and moved from one location on the progress line to another without having an effect on the play of the media file.

It is further noted that codec **303** compares the information for the media player application operating in client computer system, e.g., **210**, with a list of "signatures" associated with known media recording applications. In one embodiment, the signature can be, but is not limited to being, a unique identifier of a media player application and which can consist of the window class of the application along with a product name string which is part of the window title for the application. Advantageously, when new media player applications are developed, their signatures can be readily added to the signature list via an update of CCM **300** described herein.

The following C++ source code is exemplary implementation of the portion of a codec **303** for performing media player application detection, in accordance with an embodiment of the present invention.

```
int
IsRecorderPresent(TCHAR * szAppClass,
                  TCHAR *   szProdName)
{
    TCHAR  szWndText[_MAX_PATH]; /* buffer to receive
           title string for window */
    HWND   hWnd;      /* handle to target window for operation */
    int    nRetVal;   /* return value for operation */
    /* initialize variables */
    nRetVal = 0;
    if ( _tcscmp(szAppClass,_T("#32770"))
       == 0)
    {
        /* attempt to locate dialog box with specified window title */
        if ( FindWindow((TCHAR *) 32770, szProdName)
           != (HWND) 0)
        {
            /* indicate application found */
            nRetVal = 1;
        }
    }
    else
    {
        /* attempt to locate window with specified class */
        if ( (hWnd = FindWindow(szAppClass, (LPCTSTR) 0))
           != (HWND) 0)
        {
            /* attempt to retrive title string for window */
            if (   GetWindowText(hWnd,
                                 szWndText,
                                 _MAX_PATH)
                != 0)
            {
                /* attempt to locate product name within title string */
                if ( _tcsstr(szWndText, szProdName)
                   != (TCHAR *) 0)
                {
                    /* indicate application found */
                    nRetVal = 1;
                }
            }
        }
    }
    /* return to caller */
    return nRetVal;
}
```

It is further noted that codec **303** can also selectively suppress waveform input/output operations to prevent

recording of copyrighted media on a client computer system **210**. For example, codec **303**, subsequent to detection of bundled media player applications operational in a client computer system, e.g., **210**, can stop or disrupt the playing of a media content file. This can be accomplished, in one embodiment, by redirecting and/or diverting certain data pathways that are commonly used for recording, such that the utilized data pathway is governed by the copyright compliance mechanism **300**. In one embodiment, this can be performed within a driver shim, e.g., wave driver shim **309** of FIGS. **5**A and **5**B.

A driver shim can be utilized for nearly any software output device, e.g., a standard Windows™ waveform output device, e.g., Windows™ Media Player, or hardware output device, e.g., speakers or headphones. Client computer system **210** is configured such that the driver shim, (e.g., **309** of FIGS. **5**A and **5**B) will appear as the default waveform media device to client level application programs. Thus, requests for processing of waveform media input and/or output will pass through the driver shim prior to being forwarded to the actual waveform audio driver, media device driver **505** of FIGS. **5**A and **5**B. Such waveform input/output suppression can be triggered by other components of CCM **300**, e.g., agent **304**, to be active when a recording operation is initiated by a client computer system, e.g., **210**, during the play back of media files which are subject to the DMCA.

It is noted that alternative driver shims can be implemented for nearly any waveform output device including, but not limited to, a Windows™ Media Player. It is further noted that the driver shim can be implemented for nearly any media in nearly any format including, but not limited to, audio media files and audio input and output devices, video, graphic and/or alphanumeric media files and video input and output devices.

The following C++ source code is an exemplary implementation of a portion of a codec **303** and/or a custom media device driver **307** for diverting and/or redirecting certain data pathways that are commonly used for recording of media content, in accordance with an embodiment of the present invention.

```
DWORD
__stdcall
widMessage(UINT          uDevId,
        UINT             uMsg,
        DWORD        dwUser,
        DWORD        dwParam1,
        DWORD        dwParam2)
{
    BOOL             bSkip;      /* flag indicating operation to be
                     skipped */
    HWND                 hWndMon;    /* handle to main window for
                         monitor */
    DWORD                dwRetVal;   /* return value for operation */
    /* initialize variables */
    bSkip = FALSE
    dwRetVal = (DWORD) MMSYSERR_NOTSUPPORTED;
    if(uMsg == WIDM_START)
    {
        /* attempt to locate window for monitor application */
        if ( (hWndMon = FindMonitorWindow( ))
          != (HWND)0)
        {
            /* obtain setting for driver */
            bDrvEnabled = (    SendMessage(hWndMon,
                                           uiRegMsg,
                                           0,
                                           0)
                                           == 0)
                                ? FALSE:TRUE;
        }
        if(bDrvEnabled == TRUE)
        {
            /* indicate error in operation */
            dwRetVal = MMSYSERR_NOMEM;
            /* indicate operation to be skipped */
            bSkip = TRUE;
        }
    }
    if(bSkip == FALSE)
    {
        /* invoke entry point for original driver */
        dwRetVal = CallWidMessage(uDevId, uMsg, dwUser,
        dwParam1, dwParam2);
    }
    /* return to caller */
    return dwRetVal;
}
```

It is noted that when properly configured, system hook **305** can govern nearly any function or property within nearly any media player application that may be operational within a client computer system, e.g., **210**-**230**. In one embodiment, system hook **305** is a DLL (dynamic link library) file. It is further noted that system hooks are well known in the art, and are a standard facility in a Microsoft Windows™ operating environment, and accordingly can be implemented in a variety of ways. However, it is also noted that system hook **305** can be readily adapted for implementation in alternative operating systems, e.g., Apple™ operating systems, Sun Solaris™ operating systems, Linux operating systems, and nearly any other operating system.

In FIG. **3**, copyright compliance mechanism **300** also includes one or more skins **306**, which can be designed to be installed in a client computer system, e.g., **210**-**230**. In one embodiment, skins **306** are utilized to assist in client side compliance with the DMCA (digital millennium copyright act) regarding copyrighted media content. Skins **306** are customizable interfaces that, in one embodiment, are displayed on a display device (e.g., **105**) of computer system **210** and provide functionalities for user interaction of delivered media content. Additionally, skins **306** can also provide a display of information relative to the media content file including, but not limited to, song title, artist name, album title, artist bio, and other features such as purchase inquiries, advertising, and the like.

Furthermore, when system hook **305** is unable to govern a function of the media player application operable on a client computer system, e.g., **210**, such that client computer system could be in non-compliance with DMCA and/or RLAA restrictions, a skin **306** can be implemented to provide compliance.

Differing skins **306** can be implemented depending upon the DMCA and/or RIAA restrictions applicable to each media content file. For example, in one embodiment, a skin **306***a* may be configured for utilization with a media content file protected under a non-interactive agreement (DMCA), such that skin **306***a* may not include a pause function, a stop function, a selector function, and/or a save function, etc. Another skin, e.g., skin **306***b* may, in one embodiment, be configured to be utilized with a media content file protected under an interactive with "no save" agreement (DMCA), such that skin **306***b* may include a pause function, a stop

function, a selector function, and for those media files having an interactive with "save" agreement, a save or a burn to CD function.

Still referring to FIG. **3**, it is further noted that in the present embodiment, each skin **306** can have a unique name and signature. In one embodiment, skin **306** can implemented, in part, through the utilization of an MD (message digest) 5 hash table or similar algorithm. An MD5 hash-table can, in one implementation, be a check-sum algorithm. It is well known in the art that a skin, e.g., skin **306**, can be renamed and/or modified to incorporate additional features and/or functionalities in an unauthorized manner. Since modification of the skin would change the check sum and/or MD5 hash, without knowledge of the MD5 hash table, changing the name or modification of the skin may simply serve to disable the skin, in accordance with one embodiment of the present invention. Since copyright compliance mechanism **300** verifies skin **306**, MD5 hash tables advantageously provide a deterrent against modifications made to the skin.

In one embodiment, copyright compliance mechanism **300** also includes one or more custom media device driver(s) **307** for providing an even greater measure of control over the media stream while increasing compliance reliability. A client computer system, e.g., **210**, can be configured to utilize a custom media device application, e.g., custom media device **310** (shown in FIG. **5**B), to control unauthorized recording of media content files. A custom media device application can be, but is not limited to, a custom media audio device application for media files having sound content, a custom video device application for media files having graphical and/or alphanumeric content, etc. In one embodiment, custom media device **310** of FIG. **5**B is an emulation of the custom media device driver **307**. With reference to audio media, the emulation is performed in a waveform audio driver associated with custom media device **310**. Driver **307** is configured to receive a media file being outputted by system **210** prior to the media file being sent to a media output device, e.g., media output device **570**, and/or a media output application, e.g., recording application **502**. Examples of a media output device includes, but is not limited to, a video card for video files, a sound card for audio files, etc. Examples of a recording application can include, but is not limited to, CD burner applications for writing to another CDs, ripper applications which capture the media file and change the format of the media file, e.g., from a MP3 file to a .wav file. In one embodiment, client computer system **210** is configured with a custom media device driver **307** emulating custom media device **310**, and which is system **210**'s default device driver for media file output. In one embodiment, an existing GUI (graphical user interface) can be utilized or a GUI can be provided, e.g., by utilization of skin **306** or a custom web based player application or as part of a CCM **300** installation bundle, for forcing or requiring system **210** to have driver **307** as the default driver.

Therefore, when a media content file is received by system **210** from server **251**, the media content file is playable, provided the media content file passes through the custom media device application (e.g., **310** of FIG. **5**B), emulated by custom media device driver **307**, prior to being outputted. However, if an alternative media player application is selected, delivered media files from server **251** will not play on system **210**.

Thus, secured media player applications would issue a media request to the driver, e.g., **307**, for the custom media device **310** which then performs necessary media input suppression, e.g., waveform suppression for audio files, prior to forwarding the request to the default Windows™ media driver, e.g., waveform audio driver for audio files.

It is noted that requests for non-restricted media files can pass directly through custom media device driver **307** to a Windows™ waveform audio driver operable on system **210**, thus reducing instances of incompatibilities with existing media player applications that utilize waveform media, e.g., audio, video, etc. Additionally, media player applications that do not support secured media would be unaffected. It is further noted that for either secured media or non-restricted media, e.g., audio media files, waveform input suppression can be triggered by other components of CCM **300**, e.g., agents **304**, system hooks **305**, and skins **306**, or a combination thereof, to be active when a recording operation is initiated simultaneously with playback of secured media files, e.g., audio files. Custom device drivers are well known and can be coded and implemented in a variety of ways including, but limited to, those found at developers network web sites, e.g., a Microsoft™ or alternative OS (operating system) developer web sites.

Advantageously, by virtue of system **210** being configured with a custom media device as the default device driver e.g., device **310** of FIGS. **5**B and **5**C, emulated by a custom media device driver **307**, those media player applications that require their particular device driver to be the default driver, e.g., Total Recorder, etc., are rendered non-functional for secured music. Further advantageous is that an emulated custom media device provides no native support for those media player applications used as a recording mechanism, e.g., DirectSound capture, (direct sound **504** of FIGS. **5**A, **5**B, and **5**C) etc., that are able to bypass user-mode drivers for most media devices. Additionally, by virtue of the media content being sent through device driver **307**, thus effectively disabling unauthorized saving/recording of media files, in one embodiment, media files that are delivered in a secured delivery system do not have to be encrypted, although, in another embodiment, they still may be encrypted. By virtue of non-encrypted media files utilizing less storage space and network resources than encrypted media files, networks having limited resources can utilize the functionalities of driver **307** of CCM **300** to provide compliance with copyright restrictions and/or licensing agreements applicable with a media content file without having the processing overhead of encrypted media files.

FIG. **4** is an illustration of an exemplary system **400** for implementing a copyright compliance mechanism in accordance with an embodiment of the present invention. Specifically, system **400** illustrates web server **250**, content server **251**, or a combination of web server **250** and content server **251** installing a copyright compliance mechanism (e.g., **300**) in a client's computer system (e.g., **210**) for controlling media file distribution and controlling user access and interaction of copyrighted media files, in one embodiment of the present invention.

Client computer system **210** can communicatively couple with a network (e.g., **200**) to request a media file, a list of available media files, or a play list of audio files, e.g., MP3 files, etc. In response, web server **250** determines if the request originates from a registered user authorized to receive media files associated with the request. If the user is not registered with the network, web server **250** can initiate a registration process with the requesting client **210**. Client registration can be accomplished in a variety of ways. For example, web server **250** may deliver to a client **210** a registration form having various text entry fields into which the user can enter required information. A variety of information can be required from the user by web server **250**

including, but not limited to, user's name, address, phone number, credit card number, verifiable email address, and the like. In addition, registration can, in one embodiment, include a requirement for the user to select a username and password.

Still referring to FIG. **4**, web server **250** can, in one embodiment, detect information related to the client's computer system, e.g., **210**, and store that information in a user/media database **450**. For example, web server **250** can detect a unique identifier of client computer system **210**. In one embodiment, the unique identifier can be the MAC (machine address code) address of a NIC (network interface card) of client computer system **210** or the MAC address of the network interface adapter integrated on the motherboard of system **210**. It is understood that a NIC enables a client computer system **210** to access web server **250** via Internet **201**. It is well known that each NIC typically has a unique identifying number MAC address. Further, web server **250** can, in one embodiment, detect and store (also in database **450**) information regarding the types(s) of media player application(s), e.g., Windows Media Player™, Real Player™, iTunes player™ (Apple), Live 365™ player, and those media player applications having recording functionality, e.g., Total Recorder, Cool Edit 2000, Sound Forge, Sound Recorder, Super MP3 Recorder, and the like, that are present and operable in client computer system **210**. In one embodiment, the client information is verified for accuracy and is then stored in a user database (e.g., **450**) within web server **250**.

Subsequent to registration completion, creation of the user ID and password, and obtaining information regarding client computer system **210**, all or part of this information can be installed in client computer system **210**. In one embodiment, client computer system **210** information can be in the form of a cookie. Web server **250** then verifies that the user and client computer system **210** data is properly installed therein and that their integrity has not been compromised. Subsequently, web server **250** installs a copyright compliance mechanism (e.g., **300**) into the client's computer system, e.g., **210**, in one embodiment of the present invention. It is noted that web server **250** may not initiate installation of CCM **300** until the user ID, password, and client computer system **210** information is verified. A variety of common techniques can be employed to install an entire CCM **300**, portions of components, entire components, and/or combinations or a function of components. For example, copyright compliance mechanism **300** can be installed in a hidden directory within client computer system **210**, thereby preventing unauthorized access to it. In one embodiment of the present invention, it is noted that unless CCM **300** is installed in client computer system **210**, its user will not be able to request, access, or have delivered thereto, media files stored by web server **250** and/or content server **251**,

Referring still to FIG. **4**, upon completion of client registration and installation of CCM **300**, client computer system **210** can then request a media play list or a plurality of play lists, etc. In response, web server **250** determines whether the user of client computer system **210** is authorized to receive the media play list associated with the request. In one embodiment, web server **250** can request the username and password. Alternatively, web server **250** can utilize user database **450** to verify that computer **210** is authorized to receive a media play list. If client computer **210** is not authorized, web server **250** can initiate client registration, as described herein. Additionally, web server **250** can disconnect computer **210** or redirect it to an alternative web site. Regardless, if the user and client computer system **210** are not authorized, web server **250** will not provide the requested play list to client computer system **210**.

However, if client computer system **210** is authorized, web server **210** can check copyright compliance mechanism **300** within data base **450** to determine if it, or any of the components therein, have been updated since the last time client computer system **210** logged in to web server **250**. If a component of CCM **300** has been updated, web server **250** can install the updated component and/or a more current version of CCM **300** into client computer system **210**, e.g., via Internet **201**. If CCM **300** has not been updated, web server **250** can then deliver the requested media play list to system **210** via Internet **201** along with an appended user key or user identification (ID). It is noted that user database **450** can also include data for one or more media play lists that can be utilized to provide a media play list to client computer system **210**. Subsequently, the user of client computer system **210** can utilize the received media play list in combination with the media player application operating on system **210** to transmit a delivery request for one or more desired pieces of media content from web server **250**. It is noted that the delivery request contains the user key for validation purposes.

Still referring to FIG. **4**, upon receiving the media content delivery request, web server **250** can then check the validity of the requesting media application and the attached user key. In one embodiment, web server **250** can utilize user database **450** to check their validity. If either or both are invalid, web server **250**, in one embodiment, can redirect unauthorized client computer system **210** to an alternative destination to prevent abuse of the system. However, if both the requesting media application and the user key are valid, CCM **300** verifies that skins **306** are installed in client computer system **210**. Additionally, CCM **300** further verifies that system hook(s) **305** have been run or are running to govern certain functions of those media player applications operable within client computer system **210** that are known to provide non-compliance with the DMCA and/or the RIAA. Additionally, CCM **300** further diverts and/or redirects certain pathways that are commonly used for recording, e.g., driver **307** of FIG. **5**A, device **310** of FIG. **5**B, and device **570** of FIG. **5**C. Once CCM **300** has performed the above described functions, web server **250** then, in one embodiment, issues to the client computer **210** a redirect command to the current address location of the desired media file content along with an optional time sensitive access key, e.g., for that hour, day, or other defined timeframe.

In response to the client computer system **210** receiving the redirect command from web server **250**, the media player application operating on client computer system **210** automatically transmits a new request and the time sensitive access key to content server **251** for delivery of one or more desired pieces of media content. The validity of the time sensitive access key is checked by content server **251**. If invalid, unauthorized client computer **210** is redirected by content server **250** to protect against abuse of the system and unauthorized access to content server **251**. If the time sensitive access key is valid, content server **251** retrieves the desired media content from content database **451** and delivers it to client computer system **210**. It is noted that, in one embodiment, the delivered media content can be stored in hidden directories and/or custom file systems that may be hidden within client computer system **210** thereby preventing future unauthorized distribution. In one embodiment, an HTTP (hypertext transfer protocol) file delivery system is

used to deliver the requested media files, meaning that the media files are delivered in their entirety to client computer system **210**, as compared to streaming media which delivers small portions of the media file.

Still referring to FIG. **4**, it is noted that each media file has, in one embodiment, had a header attached therewith prior to delivery of the media file. In one embodiment, the header can contain information relating to the media file, e.g., title or media ID, media data such as size, type of data, and the like. The header can also contain a sequence or key that is recognizable to copyright compliance mechanism **300** that identifies the media file as originating from a content server **251**. In one embodiment, the header sequence/key can also contain instructions for invoking the licensing agreements and/or copyright restrictions that are applicable to that particular media file.

Additionally, if licensing agreements or copyright restrictions are changed, developed, or created, or if new media player applications, with or without recording functionality, are developed, CCM **300** would have appropriate modifications made to portions of components, entire components, combinations of components, and/or the entire CCM **300** to enable continued compliance with licensing agreements and copyright restrictions. Furthermore, subsequent to modification of copyright compliance mechanism **300**, modified portions of, or the entire updated CCM **300** can easily be installed in client computer system **210** in a variety of ways. For example, the updated CCM **300** can be installed during client interaction with web server **250**, during user log-in, and/or while client computer system **210** is receiving the keyed play list.

Referring still to FIG. **4**, it is further noted that, in one embodiment, the media files and attached headers can be encrypted prior to being stored within content server **251**. In one embodiment, the media files can be encrypted utilizing randomly generated keys. Alternatively, variable length keys can be utilized for encryption. It is noted that the key to decrypt the encrypted media files can be stored in a database **450**, content database **451** or in some combination of databases **450** and **451**. It is further noted that the messages being passed back and forth between client computer system **210** and web server **250** can also be encrypted, thereby protecting the media files and the data being exchanged from unauthorized use or access. There are a variety of encryption mechanisms and programs that can be implemented to encrypt this data including, but not limited to, exclusive OR, shifting with adds, public domain encryption programs such as Blowfish, and non-public domain encryption mechanisms. It is also noted that each media file can be uniquely encrypted, such that if the encryption code is cracked for one media file, it is not applicable to other media files. Alternatively, groups of media files can be similarly encrypted. Furthermore, in another embodiment, the media files may not be encrypted when being delivered to a webcaster known to utilize a proprietary media player application, e.g., custom media device driver **307**.

Subsequent to media file decryption, the media file may be passed through CCM **300**, e.g., a coder/decoder **303**, to a media player application operating on client computer system **210**, e.g. playback application **501** of FIGS. **5**A, **5**B, **5**C, and **6**A, which can then access and utilize the delivered high fidelity media content, enabling its user(s) to experience the media content, e.g., listen to it, watch it, view it, or the like. In one embodiment of the present invention, a specialized or custom media player may or may not be required to experience the media content, e.g., skin **306** of FIG. **3**. A skin **306** may be necessary when CCM **300** cannot modify an industry standard media player application to comply with copyright restrictions and/or licensing agreements in accordance with the DMCA. Alternatively, an industry standard media player can be utilized by client computer system **210** to experience the media content. Typically, many media player applications are available and can include, but are not limited to, Windows™ Media Player™ for PCs (personal computers), iTunes™ Player or QuickTime™ for Apple computers, and XMMS player for computers utilizing a Linux operating system. Regardless of the media player application utilized, while the media file is passed to the media player application, e.g., in a frame by frame basis or in a buffer, coder/decoder **303** will repeatedly ensure that CCM **300** rules are being enforced at any particular moment during media playback, shown as step **650** of FIG. **6**C.

As the media file content is delivered to the media player application, periodically, e.g., after a specified number of frames, after a defined period of time, or any desired time or data period, coder/decoder **303** repeatedly determines whether or not all the rules are enforced, in accordance with rules as defined by CCM **300**. If the rules are not enforced, e.g., change due to a user opening up a recording application, e.g., Total Recorder or alternative application, the presentation of the media content is, in one embodiment, suspended or halted. In another embodiment, the presentation of the media content can be modified to output the media content non audibly, e.g., silence. In yet another embodiment, the media content may be audible but recording functionality can be disabled, such that the media content cannot be recorded. These presentation stoppages are collectively shown as step **651** of FIG. **6**C.

If the rules, in accordance with CCM **300**, are enforced, the codec/decoder **303** retrieves a subsequent portion of the media content that is stored locally in client computer system **210**. The newly retrieved portion of the media file is then presented by the client's media player application. While the newly retrieved portion is presented, CCM **300** then again checks that the rules are enforced, and retrieves an additional portion of the media file or suspends presentation of the media file is the rules are not being enforced, and these steps are performed repeatedly throughout the playback of the media file, in a loop environment, until the media file's contents have been presented in their entirety. Advantageously, by constant monitoring during playing of media files, CCM **300** can detect undesired activities and enforces those rules as defined by CCM **300**.

FIG. **5**A is an exemplary logic/bit path block diagram **500**A showing utilization of a wave shim driver, e.g., wave shim driver **309** of FIG. **3**, in conjunction with copyright compliance mechanism **300**, for selectively controlling recording of copyrighted media received by a client computer system, e.g., system **210**, in one embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, installed and operational on client system **210** in the manner described herein.

In one embodiment, a copyright compliance mechanism **300** is shown as being communicatively coupled with a media playback application **501** via connection **520**. Therefore, CCM **300** is enabled to communicate with playback application **501**. In one embodiment, CCM **300** can be integrated into a media playback application. CCM **300** is also coupled to and controls a selectable switch **311** in wave shim driver **309** (as described in FIG. **3**) via connection **522**. CCM **300** is further coupled to and controls a selectable switch **511** in direct sound **504** via connection **521**. Depending upon the copyright restrictions and licensing agreements

applicable to an incoming media file, e.g., **499**, CCM **300** controls whether switches **311** and **511** are open (shown), thus preventing incoming media **499** from reaching a media recording application, or closed (not shown) to allow recording of incoming media **499**.

For example, incoming media **499** may originate from a content server, e.g., **251**, coupled to system **210**. In another example, incoming media **499** may originate from a personal recording/electronic device, e.g., a MP3 player/recorder or similar device, coupled to system **210**. Alternatively, incoming media **499** may originate from a magnetic, optical or alternative media storage device inserted into a media device player coupled to system **210**, e.g., a CD or DVD inserted into a CD or DVD player, a hard disk in a hot swappable hard drive, an SD (secure digital card) inserted into a SD reader, and the like. In yet another example, incoming media **499** may originate from another media player application or media recording application. It is noted that incoming media **499** can originate from nearly any source that can be coupled to system **210**. However, regardless of the source of incoming media **499**, embodiments of the present invention, described herein, can prevent unauthorized recording of the media.

FIG. **5**A shows a media playback application **501**, e.g., an audio, video, or other media player application, operable within system **210** and configured to receive incoming media **499**. Playback application **501** can be a playback application provided by an operating system, e.g., Media Player for Windows™ by Microsoft, a freely distributed playback application downloadable from the Internet, e.g., RealPlayer or LiquidAudio, a playback application provided by a webcaster, e.g., PressPlay, or a playback application commercially available.

FIG. **5**A shows media device driver **505** which, in one implementation, may be a software driver for a sound card coupled to system **210** having a media output device **570**, e.g., speakers or headphones, coupled therewith for media files having audio content. In another implementation, media device driver **505** may be a software driver for a video card coupled with a display device, e.g., **105**, for displaying media files having alphanumeric and/or graphical content, and so on. With reference to audio files, it is well known that a majority of recording applications assume a computer system, e.g., **210**, has a sound card disposed therein, providing full-duplex sound functionality to system **210**. This means media output driver **505** can simultaneously cause playback and recording of incoming media files **499**. For example, media device driver **505** can playback media **499** along wave-out line **539** to media output device **570** (e.g., speakers for audible playback) via wave-out line **580** while outputting media **499** on waveout line **540** to eventually reach recording application **502**.

For purposes of FIGS. **5**A, **5**B, and **5**C, the terms wave-in line and wave-out line are referenced from the perspective of media device driver **505**. Additionally, for the most part, wave-in lines are downwardly depicted and wave-out lines are upwardly depicted in FIGS. **5**A, **5**B, and **5**C.

Continuing with FIG. **5**A, playback application **501** is coupled with an operating system (O/S) multimedia subsystem **503** and direct sound **504** via wave-in lines **531** and **551** respectively. O/S multimedia subsystem **503** is coupled to a wave shim driver **309** via wave-in line **533** and wave-out line **546**. O/S multimedia subsystem **503** is also coupled to a recording application **502** via wave-out line **548**. Operating system (O/S) multimedia subsystem **503** can be any O/S multimedia subsystem, e.g., a Windows™ multimedia subsystem for system **210** operating under a Microsoft O/S, a QuickTime™ multimedia subsystem for system **210** operating under an Apple O/S, and so on. Playback application **501** is also coupled with direct sound **504** via wave-in line **551**.

Direct sound **504**, in one instance, may represent access to a hardware acceleration feature in a standard audio device, enabling lower level access to components within media device driver **505**. In another instance, direct sound **504** may represent a path that can be used by a recording application, e.g., Total Recorder, that can be further configured to bypass the default device driver, e.g., media device driver **505** to capture incoming media **499** for recording. For example, direct sound **504** can be enabled to capture incoming media **499** via wave-in line **551** and unlawfully output media **499** to a recording application **502** via wave-out line **568**, as well as media **499** eventually going to media device driver **505**, the standard default driver.

Still referring to FIG. **5**A, wave shim driver **309** is coupled with media device driver **505** via wave-in line **537** and wave-out line **542**. Media device driver **505** is coupled with direct sound **504** via wave-in line **553** which is shown to converge with wave-in line **537** at media device driver **505**. Media device driver **505** is also coupled with direct sound **504** via wave-out line **566**.

Wave-out lines **542** and **566** are shown to diverge from wave-out line **540** at media device driver **505** into separate paths. Wave-out line **542** feeds into wave shim driver **309** and wave-out line **566** feeds into direct sound **504**. When selectable switch **311** and **511** are open (shown), incoming media **499** cannot flow to recording application **502**, thus preventing unauthorized recording of it.

For example, incoming media **499** is received at playback application **501**. Playback application **501** activates and communicates to CCM **300** regarding copyright restrictions and/or licensing agreements applicable to incoming media **499**. If recording restrictions apply to media **499**, CCM **300** can, in one embodiment, open switches **311** and **511**, thereby blocking access to recording application **502**, effectively preventing unauthorized recording of media **499**. In one embodiment, CCM **300** can detect if system **210** is configured with direct sound **504** selected as the default driver to capture incoming media **499**, via wave-in line **551**, or a recording application is detected and/or a hardware accelerator is active, such that wave driver shim **309** can be bypassed by direct sound **504**. Upon detection, CCM **300** can control switch **511** such that the output path, wave-out line **568**, to recording application **502** is blocked. It is further noted that CCM **300** can detect media recording applications and devices as described herein, with reference to FIG. **3**.

Alternatively, if media device driver **505** is selected as the default driver, incoming media **499** is output from playback application **501** to O/S multimedia subsystem **503** on wave-in line **531**. From subsystem **503**, media **499** is output to wave shim driver **309** via wave-in line **533**. The wave shim driver **309** was described herein with reference to FIG. **3**. Media **499** is output from wave shim driver **309** to media device driver **505** via wave-in line **537**. Once received by media device driver **505**, media **499** can be output via wave-out line **539** to a media output device **570** coupled therewith via wave-out line **580**. Additionally, media device driver **505** can simultaneously output media **499** on wave-out line **540** back to wave shim driver **309**. Dependent upon recording restrictions applicable to media **499**, CCM **300** can, in one embodiment, close switch **311** (not shown as closed), thereby allowing media **499** to be output from wave shim driver **309** to subsystem **503** (via wave-out line **546**) and then to recording application **502** via wave-out line **548**.

Alternatively, CCM **300** can also open switch **311**, thereby preventing media **499** from reaching recording application **502**.

It is particularly noted that by virtue of CCM **300** controlling both switches **311** and **511**, and therefore controlling wave-out line **548** and wave-out line **568** leading into recording application **502**, incoming media files, e.g., media **499**, can be prevented from being recorded in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media. It is also noted that embodiments of the present invention in no way interfere with or inhibit the playback of incoming media **499**.

FIG. **5**B is an exemplary logic/bit path block diagram **500**B of a client computer system, e.g., **210**, configured with a copyright compliance mechanism **300** for preventing unauthorized recording of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in the manner with reference to FIGS. **4**, **5**A, **6**, and **7**.

Diagram **500**B of FIG. **5**B is similar to diagram **500**A of FIG. **5**A, with a few changes. Particularly, diagram **500**B includes a custom media device **310** communicatively interposed between and coupled to O/S multimedia subsystem **503** and wave shim driver **309**. Custom media device **310** is coupled to O/S multimedia subsystem via wave-in line **533** and wave-out line **546**. Custom media device **310** is coupled with wave shim driver **309** via wave-in line **535** and wave-out line **544**. Additionally, custom media device **310** is coupled with direct sound **504** via wave-in line **553** which converges with wave-in line **533** and wave-out line **566** which diverges from wave-out line **546**, in one embodiment.

Also added to FIG. **5**B is a media hardware output device **570** that is coupled to media device hardware driver **505** via line **580**. Media hardware output device **570** can be, but is not limited to, a sound card for audio playback, a video card for video, graphical, alphanumeric, etc, output, and the like.

In one embodiment, CCM **300** is communicatively coupled with playback application **501** via connection **520**, waveform driver shim **309** via connection **522**, and custom media device **310**, via connection **521**. CCM **300** is coupled to and controls a selectable switch **311** in waveform driver shim **309** via connection **522**. CCM **300** is also coupled to and controls a selectable switch **312** in custom audio device **310** via connection **521**. Depending upon the copyright restrictions and licensing agreements applicable to an incoming media file, e.g., media **499**, CCM **300** controls whether switches **311** and **312** are open (shown), thus preventing the incoming media **499** from reaching a recording application, or closed (not shown) so as to allow recording of the incoming media **499**.

Continuing with FIG. **5**B, direct sound **504** is shown coupled with custom media device **310** via wave-in line **553**, instead of being coupled with media device driver **505** (FIG. **5**A). In one embodiment, custom audio device **310** mandates explicit selection through system **210**, meaning that custom audio device **310** needs to be selected as a default driver of system **210**. By virtue of having the selection of custom media device **310** as the default driver of system **210**, the data path necessary for direct sound **504** to capture the media content is selectively closed.

For example, incoming media **499** originating from nearly any source with reference to FIG. **5**A is received by media playback application **501** of system **210**. Playback application **501** communicates to CCM **300**, via connection **520**, to determine whether incoming media **499** is protected by any copyright restrictions and/or licensing agreements. Playback application **501** communicates with CCM **300** to control switch **311** and **312** accordingly. In the present example, recording of incoming media **499** would violate applicable restrictions and/or agreements and therefore switch **312** is in an open position, such that the output path to recording application **502**, e.g., wave-out line **548** and/or wave-out line **568**, is effectively blocked, thereby preventing unauthorized recording of media **499**.

Alternatively, if media device driver **505** is selected as the default driver, incoming media **499** continues from O/S multimedia subsystem **503**, through custom audio device **310**, wave driver shim **309**, and into media device driver **505** where media **499** can be simultaneously output to media output device **570** via line **580**, and output on wave-out line **540** to wave-and outputted by media device driver **505** to wave shim driver **309** on wave-out line **542**. However, by virtue of CCM **300** controlling switch **311**, wave-out line **544** which eventually leads to recording application **502** is blocked, thus effectively preventing unauthorized recording of media **499**.

It is particularly noted that by virtue of CCM **300** controlling both switches **311** and **312** and therefore controlling wave-out line **548** and wave-out line **568**, any incoming media files, e.g., incoming media **499**, can be prevented from being recording in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media.

Still referring to FIG. **5**B, it is further noted that custom media device **310** allows for unfettered playback of incoming media **499**. Additionally, at any time during playback of media **499**, custom media device **310** can be dynamically activated by CCM **300**.

FIG. **5**C is an exemplary logic/bit path block diagram **500**C of a client computer system, e.g., **210**, configured with a copyright compliance mechanism **300** for preventing unauthorized output and unauthorized recording of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in the manner with reference to FIGS. **4**, **5**A, **5**B, **6**, and **7**.

Diagram **500**C of FIG. **5**C is similar to diagram **500**B of FIG. **5**B, with a few changes. Particularly, diagram **500**C includes a media hardware output device **570** that is coupled with a media device driver **505**. In one embodiment, media hardware output device **570** can be a S/PDIF (Sony/Phillips Digital Interface) card for providing multiple outputs, e.g., an analog output **573** and a digital output **575**. An alternative media hardware output device providing similar digital output can also be implemented as device **570** including, but not limited to, a USB (universal serial bus) output device and/or an externally accessible USB port located on system **210**, a FireWire (IEEE1394) output device and/or an externally accessible FireWire port located on system **210**, with wireline or wireless functionality. In the present embodiment, media hardware output device **570** is shown to include a switch **571** controlled by CCM **300** via communication line **523**, similar to switches **311** and **312**, for controlling output of incoming media **499**.

In one embodiment, CCM **300** is communicatively coupled with playback application **501** via connection **520**, waveform driver shim **309** via connection **522**, custom media device **310**, via connection **521**, and media hardware output device **570** via connection **523**. CCM **300** is coupled to and controls a selectable switch **311** in waveform driver shim **309** via connection **522**. CCM **300** is also coupled to

and controls a selectable switch **312** in custom audio device **310** via connection **521**. CCM **300** is further coupled to and controls a selectable switch **571** in media hardware output device **570** via connection **523**. Depending upon the copyright restrictions and licensing agreements applicable to an incoming media file, e.g., media **499**, CCM **300** controls whether switches **311** and **312** are open (shown), thus preventing the incoming media **499** from reaching a recording application, or closed (not shown) so as to allow recording of the incoming media **499**. Additionally, CCM **300** controls whether switch **571** is open (shown), thus preventing incoming media **499** from being output from digital output **575** of media hardware output device **570**, or closed (not shown) to allow incoming media **499** to be output from media hardware output device **570**.

By controlling media hardware output device **570**, copyright compliance mechanism **300** can prevent unauthorized output of incoming media **499** to, e.g., a digital recording device that may be coupled with digital output **575** of media hardware output device **570**. Accordingly, in one embodiment, CCM **300** is enabled to also detect digital recording devices that may be coupled to a digital output line, e.g., **571**, of a media hardware output device, e.g., **570**. Examples of a digital recording device that can be coupled to media hardware output device **570** can include, but is not limited to, mini-disc recorders, MP3 recorders, personal digital recorders, digital recording devices coupled with multimedia systems, and/or nearly any digital device that can capture an incoming media **499** being output from a media hardware output device **570**, e.g. a sound card.

Continuing with FIG. **5**C, direct sound **504** is shown coupled with custom media device **310** via wave-in line **553**, instead of being coupled with media device driver **505** (FIG. **5**A). In one embodiment, custom audio device **310** mandates explicit selection through system **210**, meaning that custom audio device **310** is needs to be selected as a default driver of system **210**. By virtue of having the selection of custom media device **310** as the default driver of system **210**, the data path necessary for direct sound **504** to capture the media content is selectively closed.

For example, incoming media **499** originating from nearly any source with reference to FIG. **5**A is received by media playback application **501** of system **210**. Playback application **501** communicates to CCM **300**, via connection **520**, to determine whether incoming media **499** is protected by any copyright restrictions and/or licensing agreements. Playback application **501** communicates with CCM **300** to control switch **311**, **312**, and **571** accordingly. In the present example, recording of incoming media **499** would violate applicable restrictions and/or agreements and therefore switch **312** is in an open position, such that the output path to recording application **502**, e.g., wave-out line **548** and/or wave-out line **568**, is effectively blocked, thereby preventing unauthorized recording of media **499**.

Alternatively, if media device driver **505** is selected as the default driver, incoming media **499** continues from O/S multimedia subsystem **503**, through custom audio device **310**, wave driver shim **309**, and into media device driver **505** where media **499** can be simultaneously output to media output device **570** via line **580**, and output on wave-out line **540** to wave-and outputted by media device driver **505** to wave shim driver **309** on wave-out line **542**. However, by virtue of CCM **300** controlling switch **311**, wave-out line **544** which eventually leads to recording application **502** is blocked, thus effectively preventing unauthorized recording of media **499**.

It is particularly noted that by virtue of CCM **300** controlling both switches **311** and **312** and therefore controlling wave-out line **548** and wave-out line **568**, any incoming media files, e.g., incoming media **499**, can be prevented from being recording in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media.

Still referring to FIG. **5**C, it is particularly noted that although CCM **300** can prevent unauthorized recording of incoming media **499** by controlling switches **311** and **312**, thus preventing incoming media **499** from reaching recording application **502**, controlling switches **311** and **312** do nothing to prevent incoming media **499** from being captured by a peripheral digital device, e.g., a mini-disc recorder, etc., coupled to a digital output **575** of device **570**. Thus, by also controlling the output, via digital output **575** of media hardware output device **570**, through control of switch **571**, CCM **300** can prevent unauthorized capturing of incoming media **499** during output, e.g., on a sound card for audio files, a video card for video and/or graphical files, regardless of whether incoming media **499** is received in a secure and encrypted manner. However, when switch **571** is in a closed position, incoming media **499** may be played back in an unfettered manner. Additionally, at any time during playback of media **499**, switch **312** of custom media device **310**, switch **311** of media device driver **309**, and/or switch **571** of media hardware output device **570** can be dynamically activated by CCM **300**.

FIG. **6**A is an block diagram of a media file, e.g., incoming media **499**, adapted to be received by a playback application, e.g., **501** of FIGS. **5**A, **5**B, and **5**C, configured with an indicator **605** for enabling incoming media **499** to comply with rules according to the SCMS (serial copy management system). When applicable to a media file, e.g., **499**, the SCMS allows for one copy of a copyrighted media file to be made, but not for copies of copies to be made. Thus, if incoming media **499** can be captured by a recording application, e.g., **502** of FIGS. **5**A, **5**B, and/or **5**C, and/or a recording device, e.g. **529**, and/or a peripheral recording device and/or a recording application coupled to a digital output of a media hardware output device, e.g., digital output **575** of media hardware output device **570** of FIGS. **5**B and **5**C, unauthorized copying and/or recording may be accomplished.

Playback application **501** is coupled with CCM **300** via communication line **520** in a manner analogous to FIGS. **5**A, **5**B and/or **5**C. Although not shown in FIG. **6**, it is noted that CCM **300** is also coupled to switches **311** and **511** as shown in FIG. **5**A, switches **311** and **312** in FIG. **5**B, and switches **311**, **312**, and **571** in FIG. **5**C.

In one embodiment, an indicator **605** is attached to incoming media **499** for preventing unauthorized copying or recording in accordance with the SCMS. In one embodiment, indicator **605** can be a bit that may be transmitted prior to beginning the delivery of incoming media **499** to playback application **501**. In another embodiment, indicator **605** may placed at the beginning of the bit stream of incoming media **499**. In another embodiment, indicator **605** may be placed within a frame period of incoming media **499**, e.g., every fifth frame, or any other desired frame period. In another embodiment, indicator **605** may be transmitted at a particular time interval or intervals during delivery of the media file, e.g. incoming media **499**. Thus, indicator **605** may be placed nearly anywhere within or attached to the bit stream related to incoming media **499**.

Indicator **605** may be comprised of various indicators, e.g., a level **0** indicator, a level **1** indicator, and a level **2**

indicator, in one embodiment of the present invention. In the present embodiment, a level **0** indicator may be for indicating to CCM **300** that copying is permitted without restriction, e.g., incoming media **499** is not copyrighted or that the copyright is not asserted. In the present embodiment, a level **1** indicator may be for indicating to CCM **300** that one generation of copies of incoming media **499** may be made, such that incoming media **499** is an original copy and that one copy may be made. In the present embodiment, a level **2** indicator may be for indicating to CCM **300** that incoming media **499** is copyright protected and/or a copy thereof, and as such no digital copying is permitted.

For example, incoming media **499** is received by playback application **501**. Application **501** detects an indicator **605** attached therewith, in this example, a level **2** bit is placed in the bit stream for indicating to CCM **300** that copying is not permitted.

For example, when CCM **300** is configured in system **210** such as that shown in FIG. **5**A, in response to a level **2** indicator bit, CCM **300**, while controlling the audio path, then activates switches **311** and **511** to prevent any recording of incoming media **499**.

When CCM **300** is configured in system **210** such as that shown in FIG. **5**B, in response to a level **2** indicator bit, CCM **300**, while controlling the audio path, then activates switches **311** and **312** to prevent any recording of incoming media **499**.

When CCM **300** is configured in system **210** such as that shown in FIG. **5**C, in response to a level **2** indicator bit, CCM **300**, while controlling the audio path, then activates switches **311**, **312**, and **571** to prevent any recording of incoming media **499**.

It is noted that CCM **300** can activate or deactivate switches coupled therewith, as described herein with reference to FIGS. **5**A, **5**B, and **5**C, thereby funneling incoming media **499** through the secure media path, in this instance the audio path, to prevent unauthorized copying of incoming media **499**. It is further noted that CCM **300** can detect media recording applications and devices as described herein, with reference to FIG. **3**.

FIGS. **7**A, **7**B, and **7**C, are a flowchart **700** of steps performed in accordance with one embodiment of the present invention for controlling end user interaction of delivered electronic media. Flowchart **700** includes processes of the present invention which, in one embodiment, are carried out by processors and electrical components under the control of computer readable and computer executable instructions. The computer readable and computer executable instructions reside, for example, in data storage features such as computer usable volatile memory **104** and/or computer usable non-volatile memory **103** of FIG. **1**. However, the computer readable and computer executable instructions may reside in any type of computer readable medium. Although specific steps are disclosed in flowchart **700**, such steps are exemplary. That is, the present invention is well suited to performing various other steps or variations of the steps recited in FIGS. **7**A, **7**B, and **7**C. Within the present embodiment, it should be appreciated that the steps of flowchart **700** may be performed by software, by hardware or by any combination of software and hardware.

The present embodiment provides a mechanism for restricting recording of high fidelity media content delivered via one or more communication networks. The present embodiment delivers the high fidelity media content to registered clients while preventing unauthorized clients from directly receiving media content from a source database. Once the client computer system receives the media content, it can be stored in hidden directories and/or custom file systems that may be hidden to prevent subsequent unauthorized sharing with others. It is noted that various functionalities can be implemented to protect and monitor the delivered media content. For example, the physical address of the media content can be hidden from media content recipients. In another example, the directory address of the media content can be periodically changed. Additionally, an access key procedure and rate control restrictor can also be implemented to monitor and restrict suspicious media content requests. Furthermore, a copyright compliance mechanism, e.g., CCM **300**, can be installed in the client computer system **210** to provide client side compliance with licensing agreements and copyright restrictions applicable to the media content. By implementing these and other functionalities, the present embodiment restricts access to and the distribution of delivered media content and provides a means for copyrighted media owner compensation.

It is noted that flowchart **700** is described in conjunction with FIGS. **2**, **3**, **4**, **5**A, **5**B, **5**C, in order to more fully describe the operation of the present embodiment. In step **702** of FIG. **7**A, a user of a computer system, e.g., **210**, causes the computer to communicatively couple to a web server, e.g., **250**, via one or more communication networks, e.g., Internet **201**, and proceeds to attempt to log in. It is understood that the log in process of step **602** can be accomplished in a variety of ways in accordance with the present invention.

In step **704** of FIG. **7**A, web server **250** accesses a user database, e.g., **450**, to determine whether the user and the computer system **210** logging in are registered with it. If the user and computer system **210** are registered with web server **250**, the present embodiment proceeds to step **714**. However, if the user and computer system **210** are logging in for the first time, web server **250** can initiate a user and computer system **210** registration process at step **706**.

In step **706**, registration of the user and computer system **210** is initiated. The user and computer system registration process can involve the user of computer system **210** providing personal information including, but not limited to, their name, address, phone number, credit card number, and the like. Web server **250** can verify the accuracy of the information provided. Web server **250** can also acquire information regarding the user's computer system **210** including, but not limited to, identification of media players disposed and operable on system **210**, a unique identifier corresponding to the computer system, etc. In one embodiment, the unique identifier corresponding to the computer system can be a MAC address. Additionally, web server **250** can further request that the user of computer system **210** to select a username and password.

In step **708** of FIG. **7**A, subsequent to the completion of the registration process, web server **250** generates a unique user identification (ID) or user key associated with the user of client computer system **210**. The unique user ID, or user key, is then stored by web server **250** in a manner that is associated with that registered user. Furthermore, one or more cookies containing that information specific to that user and the user's computer system **210**, is installed in a non-volatile memory device, e.g., **103** and/or data storage device **108** of computer system **210**. It is noted that the user ID and cookie can be stored in a hidden directory within one or more non-volatile memory devices within computer system **210**, thereby preventing user access and/or manipulation of that information. It is further noted that if the unique user ID, or user key, has been previously generated for the user

and computer **210** that initially logged-in at step **702**, the present embodiment proceeds to step **714**

In step **710**, web server **250** verifies that the user ID and the cookie(s) are properly installed in computer system **210** and verifies the integrity of the cookie(s) and the user ID, thereby ensuring no unauthorized alterations to the user ID or the cookie has occurred. If the user ID is not installed and/or not valid, web server **250** can re-initiate the registration process at step **706**. Alternatively, web server **250** can decouple computer system **210** from the network, thereby requiring a re-log in by the user of computer **210**. If the cookie(s) and user ID are valid, the present embodiment proceeds to step **712**.

In step **712** of FIG. **7**A, web server **250** can install a version of a copyright compliance mechanism, e.g., **300**, onto one or more non-volatile memory devices of computer system **210**. Installing CCM **300** into user's computer system **210** can facilitate client side compliance with licensing agreements and copyright restrictions applicable to specific delivered copyrighted media content. At step **712**, the components of CCM **300**, such as instructions **301**, coder/decoder (codec) **303**, agent programs **304**, system hooks **305**, skins **306**, and custom media device drivers **307** (e.g., custom media device **310** of FIGS. **5**B and **5**C), are installed in computer system **210**, such as that shown in FIGS. **5**A, **5**B, and **5**C. In one embodiment, a hypertext transfer protocol file delivery system can be utilized to install CCM **300** into computer system **210**. However, step **712** is well suited to install CCM **300** on computer system **210** in a wide variety of ways in accordance with the present embodiment. For example, CCM **300** can be installed as an integrated component within a media player application, media recorder application, and/or media player/recorder applications. Alternatively, CCM **300** can be installed as a stand alone mechanism within a client computer system **210**. Additionally, CCM **300** can be installed as a stand alone mechanism and/or as part of a bundled application from a media storage device, e.g., a CD, a DVD, an SD, and/or as part of an installation package.

In step **714**, web server **250** can request the previously established username and password of the user of client computer system **210**. Accordingly, the user of client computer system **210** causes it to transmit to web server **250** the previously established username and password. Upon the receipt thereof, web server **250** may access a user database, e.g., **450**, to determine their validity. If the usemame and password are invalid, web server **250** refuses access wherein flowchart **500** may be discontinued (not shown). Alternatively, if the username and password are valid, the present embodiment proceeds to step **716**.

In step **716** of FIG. **7**A, web server **250** can access media file database **450** to determine if copyright compliance mechanism **300** has been updated to reflect changes made to the DMCA (digital millennium copyright act) and/or to the interactive/non-interactive licensing agreements recognized by the DMCA. It is noted that alternative licensing agreements can be incorporated into copyright compliance mechanism **300**. Advantageously, by providing a copyright compliance mechanism that can be readily updated to reflect changes in existing copyright restrictions and/or the introduction of other types of licensing agreements, and/or changes to existing media player applications, or the development of new media player applications, copyright compliance mechanism **300** can provide compliance with current copyright restrictions.

Continuing with step **716**, if web server **250** determines that CCM **300**, or components thereof, of computer **210** has been updated, web server **250** initiates installation of the newer components and/or the most current version of CCM **300** into computer system **210**, shown as step **718**. If web server **250** determines that the current version of CCM **300** installed on system **210** does not have to be updated, the present embodiment proceeds to step **720** of FIG. **7**B.

In step **720** of FIG. **7**B, the user of client computer system **210** causes it to transmit to web server **250**, e.g., via Internet **201**, a request for a play list of available media files. It is noted that the play list can contain all or part of the media content available from a content server, e.g., **251**.

In step **722**, in response to web server **250** receiving the play list request, web server **250** transmits to client computer system **210** a media content play list together with the unique user ID associated with the logged-in user. The user ID, or user key, can be attached to the media content play list in a manner invisible to the user. It is noted that the media content in content server **251** can be, but is not limited to, high fidelity music, audio, video, graphics, multimedia, alphanumeric data, and the like. The media content play list of step **720** can be implemented in diverse ways. In one example, web server **250** can generate a media content play list by combining all the available media content into a single play list. Alternatively, all of the media content titles, or different lists of titles, can be loaded from content server **251** and passed to a CGI (common gateway interface) program operating on web server **250** where the media titles, or differing lists of titles, can be concatenated into a single dimensioned array that can be provided to client computer system **210**. It is understood that the CGI can be written in nearly any software computing language.

In step **724** of FIG. **7**B, the user of client computer system **210** can utilize the received media content play list in conjunction with a media player application in order to cause client computer system **210** to transmit a request to web server **250** for delivery of desired media content, and wherein the user ID is automatically included therewith. The media content play list provided to client computer system **210** by web server **250** can enable the user to create one or more customized play lists by the user selecting desired media content titles. It is noted that a customized media play list can establish the media content that will eventually be delivered to client computer system **250** and the order in which the content will be delivered. Additionally, the user of client computer system **250** can create one or more customized play lists and store those play lists in system **250** and/or within web server **250**. It is noted that a customized play list does not actually contain the desired media content titles, but rather the play list includes one or more identifiers associated with the desired media content that can include, but is not limited to, a song, an audio clip, a video clip, a picture, a multimedia clip, an alphanumeric document, or particular portions thereof. In another embodiment, the received media content play list can include a random media content delivery choice that the user of client computer system **210** can transmit to web server **250**, with the user ID, to request delivery of the media content in a random manner.

In step **726**, upon receiving the request for media content from client computer system **210**, web server **250** determines whether the requesting media application operating on client computer system **210** is a valid media application. One of the functions of a valid media application is to be a player of media content as opposed to an application that downloads media content in an unauthorized or unregulated manner. If web server **250** determines that the media application operating on system **210** is not a valid media application, the present embodiment proceeds to step **727** which

in one embodiment, redirects client computer system **210** to a web site where the user of system **210** can download a valid media player application or to a software application which can identify client computer system **210**, log system **210** out of web server **250** and/or prevent future logging-in for a defined period of time, e.g., 15 minutes, an hour, a day, a week, a month, a year, or any specified amount of time. If web server **250** determines that the media application operating on system **210** is a valid media application, the present embodiment proceeds to step **728**.

In step **728** of FIG. **7**B, the present embodiment causes web server **250** to determine whether the user ID (or user key) that accompanied the media delivery request sent by client computer system **210** is valid. If web server **250** determines that the user ID is invalid, the present embodiment proceeds to step **729** where client computer system **210** can be logged off web server **250** or client computer system **250** can be returned to step **706** (of FIG. **7**A) to re-register and to have another unique user ID generated by web server **250**. It is noted that the order in which steps **726** and **728** are performed can be altered such that step **728** can be performed prior to step **726**. If web server **250** determines that the user ID is valid, the present embodiment proceeds to step **730**.

In step **730**, prior to web server **250** authorizing the delivery of the redirect and access key for the requested media file content, shown as step **732**, CCM **300** governs certain media player applications and/or functions thereof that are operable on client computer system **210**. These governed functions can include, pause, stop, progress bar, save, etc. It is noted that, in one embodiment, CCM **300** can utilize system hooks **305** to accomplish the functionality of step **730**.

In step **732** of FIG. **7**C, the present embodiment causes web server **250** to transmit to client computer system **210** a redirection command along with a time sensitive access key (for that hour, day or for any defined period of time) thereby enabling client computer system **210** to receive the requested media content. The redirection command can include a time sensitive address of the media content location within content server **251**. The address is time sensitive because, in one embodiment, the content server **251** periodically renames some or all of the media address directories, thereby making previous content source addresses obsolete. Alternatively, the address of the media content is changed. In another embodiment, the location of the media content can be changed along with the addresses. Regardless, unauthorized users and/or applications are restricted from directly retrieving and/or copying the media content from content server **251**. Therefore, if someone with inappropriate or unlawful intentions is able to find where the media content is stored, subsequent attempts will fail, as the previous route no longer exists, thereby preventing future unauthorized access.

It is noted that in one embodiment of the present invention, the addresses (or routes) of content server **251** that are actively coupled to one or more client computer systems (e.g., **210**-**230**) are maintained while future addresses, or routes, are being created for new client devices. It is further noted that as client computer systems are uncoupled from the media content source of content server **251**, that directory address, or link, can be immediately changed, thereby preventing unauthorized client system or application access.

In another embodiment, the redirection of client computer system **210** to content server **251** can be implemented by utilizing a server network where multiple servers are content providers, (e.g., **251**), or by routing a requesting client computer system (e.g., **210**, **220**, or **230**) through multiple servers. In yet another embodiment, the delivery of media content from a central content provider (e.g., **251**) can be routed through one or more intermediate servers before being received by the requesting client computer system, e.g., **210**-**230**.

The functionality of step **732** is additionally well suited to provide recordation of the Internet Protocol (IP) addresses of the client computer systems, e.g., **210**, the media content requested and its transfer size, thereby enabling accurate monitoring of royalty payments, clock usage and transfers, and media content popularity.

In step **734** of FIG. **7**C, upon receiving the redirection command, the present embodiment causes the media playback application **501** (FIGS. **5**A, **5**B, and **5**C) operating on client computer system **210** to automatically transmit to content server **251** a new media delivery request which can include the time sensitive access key and the address of the desired media content.

In step **726** of FIG. **7**C, content server **251** determines whether the time sensitive access key associated with the new media delivery request is valid. If content server **251** determines that the time sensitive access key is valid, the present embodiment proceeds to step **738** of FIG. **7**C. However, if content server **251** determines that the time access key is not valid, the present embodiment proceeds to step **737**, a client redirect.

In step **737**, content server redirects client computer **210** to step **732** (not shown) where a new access key is generated. Alternatively, step **737** causes the present embodiment to return to step **704** of FIG. **7**A. In yet another embodiment, step **737** causes client computer system **210** to be disconnected from content server **251**.

In step **738** of FIG. **7**C, content server **251** transmits the requested high fidelity media content to client computer system **210**. It is noted that each media content file delivered to client computer system **210** can have a header attached thereto, prior to delivery, as described with reference to FIG. **4**. It is further noted that both the media content and the header attached thereto can be encrypted. In one embodiment, the media content and the header can be encrypted differently. Alternatively, each media content file encrypted differently. In another embodiment, groups of media files are analogously encrypted. It is noted that public domain encryption mechanisms, e.g., Blowfish, and/or non-public domain encryption mechanisms can be utilized.

Still referring to step **738**, content server **251** transmits the requested media content in a burst load (in comparison to a fixed data rate), thereby transferring the content to client computer system **210** as fast as the network transfer rate allows. Further, content server **251** can have its download rate adapted to be equal to the transfer rate of the network to which it is coupled. In another embodiment, the content server **251** download rate can be adapted to equal the network transfer rate of the client computer system **210** to which the media content is being delivered. For example, if client computer system **210** is coupled to Internet **201** via a T**1** connection, then content server **251** transfers the media content at transmission speeds allowed by the T**1** connection line. As such, once the requested media content is transmitted to client computer system **210**, content server **251** is then able to transmit requested media content to another client computer system, e.g., **220** or **230**. Advantageously, this provides an efficient means to transmit media content, in terms of statistical distribution over time and does not overload the communication network(s).

It is noted that delivery of the requested media content by content server **250** to client computer system **210** can be implemented in a variety of ways. For example, an HTTP (hypertext transfer protocol) file transfer protocol can be utilized to transfer the requested media content as well as a copyright compliance mechanism **300** to client **210**. In this manner, the copyright compliance mechanism as well as each media content file/title can be delivered in its entirety. In another embodiment, content server **251** can transmit to client computer system **250** a large buffer of media content, e.g., audio clips, video clips, and the like.

In step **740** of FIG. **7**C, upon receiving the requested high fidelity media content from content server **251**, the present embodiment causes client computer system **210** to store the delivered media content in a manner that is ready for presentation, e.g., play. The media content is stored in client computer system **210** in a manner that restricts unauthorized redistribution. For example, the present embodiment can cause the high fidelity media content to be stored in a volatile memory device, utilizing one or more hidden directories and/or custom file systems that may be hidden, where it may be cached for a limited period of time. Alternatively, the present embodiment can cause the high fidelity media content to be stored in a non-volatile memory device, e.g., **103** or data storage device **108**. It is noted that the manner in which each of the delivered media content file(s) is stored, volatile or non-volatile, can be dependent upon the licensing restrictions and copyright agreements applicable to each media content file. It is further noted that in one embodiment, when a user of client computer system **210** turns the computer off or causes client computer system **210** to disconnect from the network, the media content stored in a volatile memory device is typically deleted therefrom.

Still referring to step **740**, in another embodiment, the present embodiment can cause client computer system **210** to store the received media content in a non-volatile manner within a media application operating therein, or within one of its Internet browser applications (e.g., Netscape Communicator™, Microsoft Internet Explorer™, Opera™, Mozilla™, and the like) so that delivered media content can be used in a repetitive manner. Further, the received media content can be stored in a manner making it difficult for a user to redistribute in an unauthorized manner, while allowing the user utilization of the received media content, e.g., by utilizing one or more hidden directories and/or custom file systems that may also be hidden. It is noted that by storing media content with client computer system **210** (when allowed by applicable licensing agreements and copyright restrictions), content server **251** does not need to redeliver the same media content to client computer system **210** each time its user desires to experience (e.g., listen to, watch, view, etc.) the media content file.

In step **742** of FIG. **7**C, the received media content file is then fed into a media player application (e.g., playback application **501** of FIGS. **5**A, **5**B, and **5**C), which then runs it through a codec, e.g., coder/decoder **303** of CCM **300**, in one embodiment. In response, coder/decoder **303** sends an authorization request to the server, e.g., **251**, with attached authorization data, as described herein. In response to receiving codec's **303** authorization request, server **251** compares the received authorization data with that stored in server **251**, and subsequently, the present embodiment proceeds to step **744**.

In step **744**, the server **251** responds with a pass or fail authorization. If server **251** responds with a fail, such that the received authorization data is invalid, the present method can proceed to step **745**, where server **251** can, in one embodiment, notify the user of client system **210**, e.g., by utilization of skin **306**, that there was an unsuccessful authorization of the requested media content file. It is noted that alternative messages having similar meanings may also be presented to the user of client computer system **210**, thereby informing the user that the delivery failed. However, if the authorization data passes, the present method proceeds to step **746**.

In step **746**, server **251** transmits certain data back to the media player application which enables the media player application to present the contents of the media file via media playback application **501** of FIGS. **5**A, **5**B, and **5**C. In one embodiment, a decryption key can be included in the transmitted data to decrypt the delivered media content file. In another embodiment, an encryption/decryption key can be included in the transmitted data to allow access to the contents of the media file. The present method then proceeds to step **748**.

In step **748** of FIG. **6**C, subsequent to media file decryption, the media file may be passed through CCM **300**, e.g., a coder/decoder **303**, to a media player application operating on client computer system **210**, e.g., playback application **501** of FIGS. **5**A, **5**B, and **5**C, which can then access and utilize the delivered high fidelity media content, enabling its user(s) to experience the media content, e.g., listen to it, watch it, view it, or the like. In one embodiment of the present invention, a specialized or custom media player may be involved in order to experience the media content, e.g., skin **306** of FIG. **3**. Skin **306** may be implemented when CCM **300** cannot modify an industry standard media player application to comply with copyright restrictions and/or licensing agreements in accordance with the DMCA. Alternatively, a specialized or custom media player may not be needed to experience the media content. Instead, an industry standard media player can be utilized by client computer system **210** to experience the media content. Typically, many media player applications are available and can include, but are not limited to, Windows™ Media Player™ for PCs (personal computers), iTunes™ Player or QuickTime™ for Apple computers, and XMMS player for computers utilizing a Linux operating system. Regardless of the media player application utilized, while the media file is passed to the media player application, e.g., in a frame by frame basis or in a buffer by buffer basis, coder/decoder **303** will repeatedly ensure that CCM **300** rules are being enforced at any particular moment during media playback, shown as step **750**.

In step **750**, as the media file content is delivered to the media player application, e.g., media player application **501** of FIGS. **5**A, **5**B, and **5**C, periodically, e.g., after a specified number of frames, after a defined period of time, or any desired time or data period, coder/decoder **303** repeatedly determines whether or not all the rules are enforced, in accordance with rules as defined by CCM **300**. If the rules are not enforced, e.g., change due to a user opening up a recording application (e.g., Total Recorder or alternative application) the present method proceeds to step **751**. If the rules, in accordance with CCM **300**, are enforced, the present method then proceeds to step **752**.

In step **751** of FIG. **7**C, if the rules according to CCM **300** are not enforced, the presentation of the media content is, in one embodiment, suspended or halted. In one embodiment, CCM **300** can selectively control switches **311** and **511** (FIG. **5**A) to prevent output of incoming media **499** (FIGS. **5**A, **5**B, and **5**C) to a recording application **502** (FIGS. **5**A, **5**B, and **5**C, via wave shim driver **309** and direct sound **504** respectively, thus preventing unauthorized recording of

incoming media **499**. In another embodiment, CCM **300** can selectively control switches **311** and **312** (FIG. **5**B) to prevent output of incoming media **499** to recording application **502** via wave shim driver **309** and custom media device **310**, thus preventing unauthorized recording of incoming media **499**. In yet another embodiment, CCM **300** can selectively control switches **311**, **312**, to not only prevent incoming media **499** from being recorded in an unauthorized manner but can also selectively control switch **571** (FIG. **5**C) to prevent unauthorized output of incoming media **499** via digital output **575** of media hardware output device **570**. In one embodiment, incoming media **499** may not be output from digital output **575**. In another embodiment, incoming media **499** may be output via digital output **575** but in an inaudible manner, e.g., silence. In yet another embodiment, incoming media **499** be audible but recording functionality can be disabled, such that the media content cannot be recorded.

In step **752**, if the rules are enforced in accordance with CCM **300**, coder/decoder **303** retrieves a subsequent portion of the media content that is stored locally in client computer system **210**. The newly retrieved portion of the media file is then presented by the client's media player application, shown in the present method as step **748**. While the newly retrieved portion is presented, embodiments of the present method then again perform step **750**, then step **752** or **751**, then step **748**, then **750**, etc., in a continual loop until the media file contents are presented in their entirety. Advantageously, by constantly monitoring playing media files, CCM **300** can detect undesired activities and enforce those rules defined by CCM **300**.

FIG. **8** is a diagram of an exemplary high-speed global media content delivery system **800**, in accordance with one embodiment of the present invention. In one embodiment, system **800** can be utilized to globally deliver media content, e.g., audio media, video media, graphic media, multimedia, alphanumeric media, etc., to a client computer system, e.g., **210**, **220**, and/or **230**, in conjunction with a manner of delivery similar to that described herein. In one embodiment, system **800** includes a global delivery network **802** that can include multiple content servers, e.g., **804**, **806**, **808**, **810**, **812**, **814**, and **816**, that can be located throughout the world and which may be referred to as points of presence or media delivery point(s). Each of content server **804-816** can store a portion, a substantial portion, or the entire contents of a media content library that can be delivered to client computer systems via a network, e.g., Internet **201**, or a WAN (wide area network). Accordingly, each of content server **804-816** can provide media content to of client computer systems in its respective vicinity in the world. Alternatively, each content server can provide media content to a substantial number of client computer systems

For example, a media delivery point (MDP) **816**, located in Tokyo, Japan, is able to provide and deliver media content from the media content library stored in its content database, e.g., **451**, to client computer systems within the Asiatic regions of the world while a media delivery point **812**, located in New York City, N.Y., USA, is able to provide and deliver media content from its stored media content library to client devices within the Eastern United States and Canada. It is noted that each city name, e.g., London, Tokyo, Hamburg, San Jose, Amsterdam, or New York, associated with one of the media delivery points **804-816** represents the location of that particular media delivery point or point of presence. However, it is further noted that these city names are exemplary because media delivery points **804-816** can located anywhere within the world, and as such are not limited to the cities shown in global network **802**.

Still referring to FIG. **8**, it is further noted that global system **802** is described in conjunction with FIGS. **2**, **3**, **4**, **5**, and **6**, in order to more fully describe the operation of embodiment of the present invention. Particularly, subsequent to a client computer system, e.g., client computer system **210** of FIG. **2**, interacting with a web server, e.g., web server **250** of FIG. **2**, as described herein, web server **250**, in one embodiment, can redirect client computer system **210** to receive the desired media content from an MDP (e.g., **804-816**) based on one or more differing criteria.

For example, computer system **210** may be located in Brattleboro, Vt., and its user causes it to log-in with a web server **250** which can be located anywhere in the world. It is noted that steps **702-730** of FIGS. **7**A and **7**B can then be performed as described herein such that the present embodiment proceeds to step **732** of FIG. **7**C. At step **732**, the present embodiment can determine which media delivery points, e.g., **804**, **806**, **808**, **810**, **812**, **814**, or **816**, can subsequently provide and deliver the desired media content to client computer system **210**.

Still referring to FIG. **8**, one or more differing criteria can be utilized to determine which media delivery point to select for delivery of the desired media content. For example, the present embodiment can base its determination upon which media delivery point is in nearest proximity to client computer system **210**, e.g., media delivery point **816**. This can be performed by utilizing the stored registration information, e.g., address, provided by the user of client computer system **210**. Alternatively, the present embodiment can base its determination upon which media delivery point provides media content to the part of the world in which client computer system is located. However, if each media delivery point (e.g., **804-816**) stores differing media content, the present embodiment can determine which one can actually provide the desired media content. It is noted that these are exemplary determination criteria and the embodiments of the present invention are not limited to such implementation.

Subsequent to determination of which media delivery point is to provide the media content to client computer system **210** at step **732**, web server **250** transmits to client computer system **210** a redirection command to media delivery point/content server **812** along with a time sensitive access key, also referred to as a session key, (e.g., for that hour, day, or any defined time frame) thereby enabling client computer system **210** to eventually receive the requested media content. Within system **800**, the redirection command can include a time sensitive address of the media content location within media delivery point **812**. Accordingly, the New York City media delivery point **812** can subsequently provide and deliver the desired media content to client computer system **210**. It is noted that steps **732-742** and step **737** of FIG. **7**C can be performed by media delivery point **812** in a manner similar to content server **251** described herein.

Advantageously, by utilizing multiple content servers, e.g., media delivery point **804-816**, to provide high fidelity media content to client computer systems, e.g., **210-230**, located throughout the world, communication network systems of the Internet **201** do not become overly congested. Additionally, global network **802** can deliver media content to a larger number of client computer systems (e.g., **210-230**) in a more efficient manner. Furthermore, by utilizing communication technology having data transfer rates of up to 320 Kbps (kilobits per second) or higher, embodiments of

the present invention provide for rapid delivery of the media content in a worldwide implementation.

Referring still to FIG. **8**, it is noted that media delivery points/content servers **804-816** of global network **802** can be coupled in a wide variety of ways in accordance with the present embodiment. For example, media delivery point **804-816** can be coupled utilizing wired and/or wireless communication technologies. Further, it is noted that media delivery points **804-816** can be functionally coupled such that if one of them fails, another media delivery point can take over and fulfill its functionality. Additionally, one or more web servers similar to web server **250** can be coupled to global network **802** utilizing wired and/or wireless communication technologies.

Within system **800**, content server/media delivery point **804** includes a web infrastructure that, in one embodiment, is a fully redundant system architecture. It is noted that each MDP/content server **806-816** of global network **802** can be implemented to include a web infrastructure in a manner similar to the implementation shown in MDP **804**.

Specifically, the web infrastructure of media delivery point **804** includes firewalls **818** and **820** which are each coupled to global network **802**. Firewalls **818** and **820** can be coupled to global network **802** in diverse ways, e.g., utilizing wired and/or wireless communication technologies. Particularly, firewalls **818** and **820** can each be coupled to global network **702** via a 10/100 Ethernet handoff. However, system **800** is not limited in any fashion to this specific implementation. It is noted that firewalls **818** and **820** are implemented to prevent malicious users from accessing any part of the web infrastructure of media de**1836**, e.g., a router or other switching mechanism, coupled therewith and a DB (database) server **840** coupled to device **836** while firewall **820** includes a device **838**, e.g., a router or other switching mechanism, coupled therewith and a DB (database) server **842** coupled to device **838**. Furthermore, DB server **840** is coupled with device **838** and DB server **842** is coupled with device **836**.

Still referring to FIG. **8**, and within media delivery point **804**, firewall **818** is coupled to a director device **822** which is coupled to internal web application server **826** and **828**, and a hub server **830**. Firewall **820** is coupled to a director **824** which is coupled to internal web application servers **826** and **828**, and hub server **830**. Hub server **830** can be implemented in a variety of ways including, but not limited to, as a Linux hub server. Hub server **780** is coupled to a data storage device **832** capable of storing media content. Data storage device **832** can be implemented in a variety of ways, e.g., as a RAID (redundant array of inexpensive/independent disks) appliance.

It is noted that media delivery points **804-816** can be implemented in any manner similar to content server **250** described herein. Additionally, media delivery points **804-816** of the present embodiment can each be implemented as one or more physical computing devices, e.g., computer system **100** of FIG. **1**.

Advantageously, by providing a copyright compliance mechanism, e.g., **300**, which can be easily and readily installed in a client computer system, e.g., **210**, embodiments of the present invention can be implemented to control access to, control the delivery of, and control the user's experience with media content subject to copyright restrictions and licensing agreements, fore example, as defined by the DMCA. Additionally, by closely associating a client computer system, e.g., **210**, with the user thereof, and the media content they receive, embodiments of the present invention further provide for accurate royalty recording.

The foregoing disclosure regarding specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and many modifications and variations are possible in light of above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, to thereby enable others skilled in the art to best utilize the invention and various embodiments with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the Claims appended hereto and their equivalents.

What is claimed is:

1. A method of preventing unauthorized recording of electronic media comprising:

activating a compliance mechanism in response to receiving media content by a client system, said compliance mechanism coupled to said client system, said client system having a media content presentation application operable thereon and coupled to said compliance mechanism;

controlling a data output path of said client system with said compliance mechanism by diverting a commonly used data pathway of said media player application to a controlled data pathway monitored by said compliance mechanism; and

directing said media content to a custom media device coupled to said compliance mechanism via said data output path, for selectively restricting output of said media content.

2. The method as recited in claim **1** further comprising preventing a recording application coupled to said client system from recording said media content when said recording violates usage restriction applicable to said media content.

3. The method as recited in claim **1** further comprising allowing a recording application coupled to said client system to record said media content when said recording complies with usage restrictions applicable to said media content.

4. The method as recited in claim **1** further comprising restricting said client system to have said custom media device implemented as a default media device.

5. The method as recited in claim **1** further comprising authorizing said client system to receive said media content.

6. The method as recited in claim **1** further comprising accessing an indicator associated with said media content for indicating to said compliance mechanism a usage restriction applicable to said media content.

7. The method as recited in claim **1** wherein said custom media device is an emulation of a custom media driver.

8. The method as recited in claim **1** further comprising altering said compliance mechanism in response to a change in said usage restriction, said usage restriction comprising a copyright restriction or licensing agreement applicable to said media content.

9. The method as recited in claim **1** wherein said media content is received from a source coupled to said client system, said source from the group consisting of: a network, an electronic media device, a media storage device, a media storage device inserted in a media device player, a media player application, and a media recorder application.

10. A computer readable medium having computer implementable instructions embodied therein, said instructions for causing a client system to perform a method of restricting recording of media content, said method comprising:

animating a compliance mechanism coupled to said client system, said animating in response to said client system receiving media content, said client system having a media content presentation application coupled thereto and operable with said compliance mechanism;

managing an output path of said client system with said compliance mechanism by diverting a commonly used data pathway of said media player application to a controlled data pathway monitored by said compliance mechanism; and

governing said media content via said output path to a custom media device for selectively restricting output of said media content, said compliance mechanism utilized to stop or disrupt the playing of said media content file at said controlled data pathway when said playing of said media file content is outside of said usage restriction applicable to said media file.

11. The computer readable medium of claim 10 wherein said instructions cause said client system to perform said method further comprising:

authorizing said client system to receive said media content.

12. The computer readable medium of claim 10 wherein said instructions cause said client system to perform said method further comprising:

allowing a recording application coupled to said client system to record said media content file when said recording complies with a usage restriction applicable to said media content.

13. The computer readable medium of claim 10 wherein said instructions cause said client system to perform said method further comprising:

preventing a recording application coupled to said client computer from recording said media content when said recording violates a usage restriction applicable to said media content.

14. The computer readable medium of claim 10 wherein said custom media device is selected as a default media device.

15. The computer readable medium of claim 10 wherein said instructions cause said client system to perform said method further comprising:

accessing an indicator corresponding to said media content for indicating to said compliance mechanism a usage restriction applicable to said media content.

16. The computer readable medium of claim 10 wherein said custom media device is an emulation of a custom media driver.

17. The computer readable medium of claim 10 wherein said instructions cause said client computer system to perform said method further comprising:

altering said compliance mechanism is response to changes in said usage restriction, said usage restriction a copyright restriction or licensing agreement applicable to said media content.

18. The computer readable medium of claim 10 wherein said media content is from a source coupled with said client system, wherein said source is from the group consisting of: a network, an electronic media device, a media storage device, a media storage device inserted in a media device player, a media player application, and a media recorder application.

19. A system of preventing unauthorized recording of electronic media comprising:

means for activating a compliance mechanism to control a data output path of a client system, said activating in response to said client system receiving media content, said

compliance mechanism coupled to said client system and operable in conjunction with a media

content presentation application coupled to said client system and operable thereon; and

means for directing said media content to a custom media device via said data output path controlled by said compliance mechanism, for selectively restricting output of said media content by diverting a commonly used data pathway of said media player application to a controlled data pathway monitored by said compliance mechanism, said compliance mechanism utilized to stop or disrupt the playing of said media content file at said controlled data pathway when said playing of said media file content is outside of said usage restriction applicable to said media file.

20. The system as recited in claim 19 further comprising:

means for allowing said media content to be recorded when said recording complies with usage restrictions applicable to said media content.

21. The system as recited in claim 19 further comprising:

means for preventing recording of said media content when said recording violates usage restriction applicable to said media content.

22. The system as recited in claim 19 further comprising:

means for restricting said client system to have said custom media device as a default media device.

23. The system as recited in claim 19 further comprising:

means for authorizing said client system to receive said media content.

24. The system as recited in claim 19 further comprising:

means for accessing an indicator for indicating to said compliance mechanism said usage restriction applicable to said media content, said indicator attached to said media content.

25. The system as recited in claim 19 further comprising:

means for utilization of a custom media driver to emulate said custom media device.

26. The system as recited in claim 19 further comprising:

means for altering said compliance mechanism is response to changes in said usage restriction, said usage restriction a copyright restriction or licensing agreement applicable to said media content.

27. The system as recited in claim 19 wherein said media content is from a source coupled with said client system, wherein said source is from the group consisting of: a network, an electronic media device, a media storage device, a media storage device inserted in a media device player, a media player application, and a media recorder application.

* * * * *

EXHIBIT C

US007904964B1

(12) **United States Patent**
Risan et al.

(10) **Patent No.: US 7,904,964 B1**
(45) **Date of Patent: Mar. 8, 2011**

(54) **METHOD AND SYSTEM FOR SELECTIVELY CONTROLLING ACCESS TO PROTECTED MEDIA ON A MEDIA STORAGE DEVICE**

(75) Inventors: **Hank Risan**, Santa Cruz, CA (US); **Edward Vincent Fitzgerald**, Santa Cruz, CA (US)

(73) Assignee: **Music Public Broadcasting, Inc.**, Santa Cruz, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1907 days.

(21) Appl. No.: **10/771,809**

(22) Filed: **Feb. 3, 2004**

(51) **Int. Cl.**
H04L 9/00 (2006.01)

(52) **U.S. Cl.** **726/27**

(58) **Field of Classification Search** 726/26–30, 726/7; 713/165, 167, 189, 193; 380/201
See application file for complete search history.

(56) **References Cited**

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* cited by examiner

Primary Examiner — Beemnet W Dada

(57) **ABSTRACT**

A method of preventing unauthorized reproduction of media disposed on a media storage device according to one embodiment is described. The method comprises installing a compliance mechanism on the computer system. The compliance mechanism is communicatively coupled with the computer system when installed thereon. The compliance mechanism is for enforcing compliance with a usage restriction applicable to the media. The method further includes obtaining control of a data input pathway operable on the computer system. The method further includes accessing data, that is disposed on the media storage device, that is associated with the usage restriction. The method further includes preventing the computer system from accessing the media digitally via the data pathway while enabling presentation of the protected media.

43 Claims, 18 Drawing Sheets

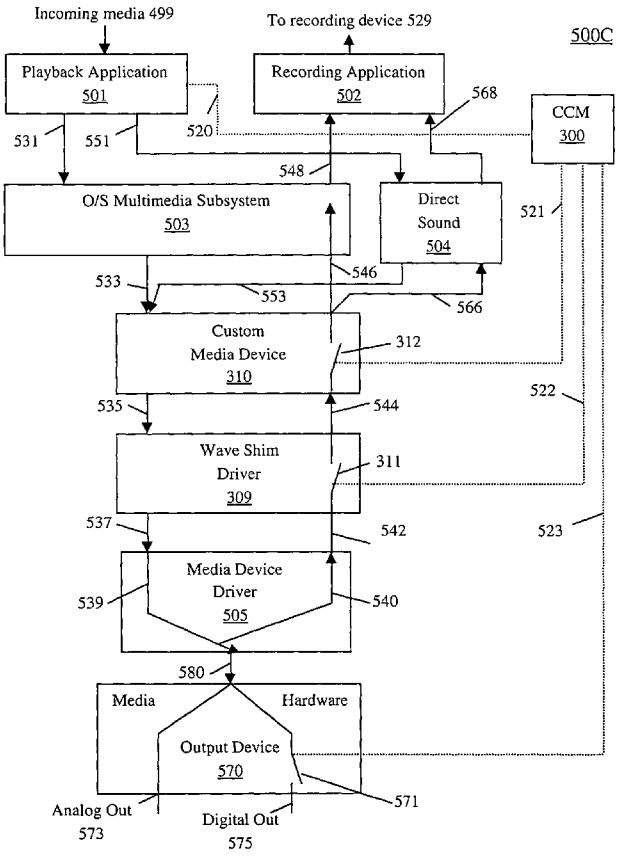
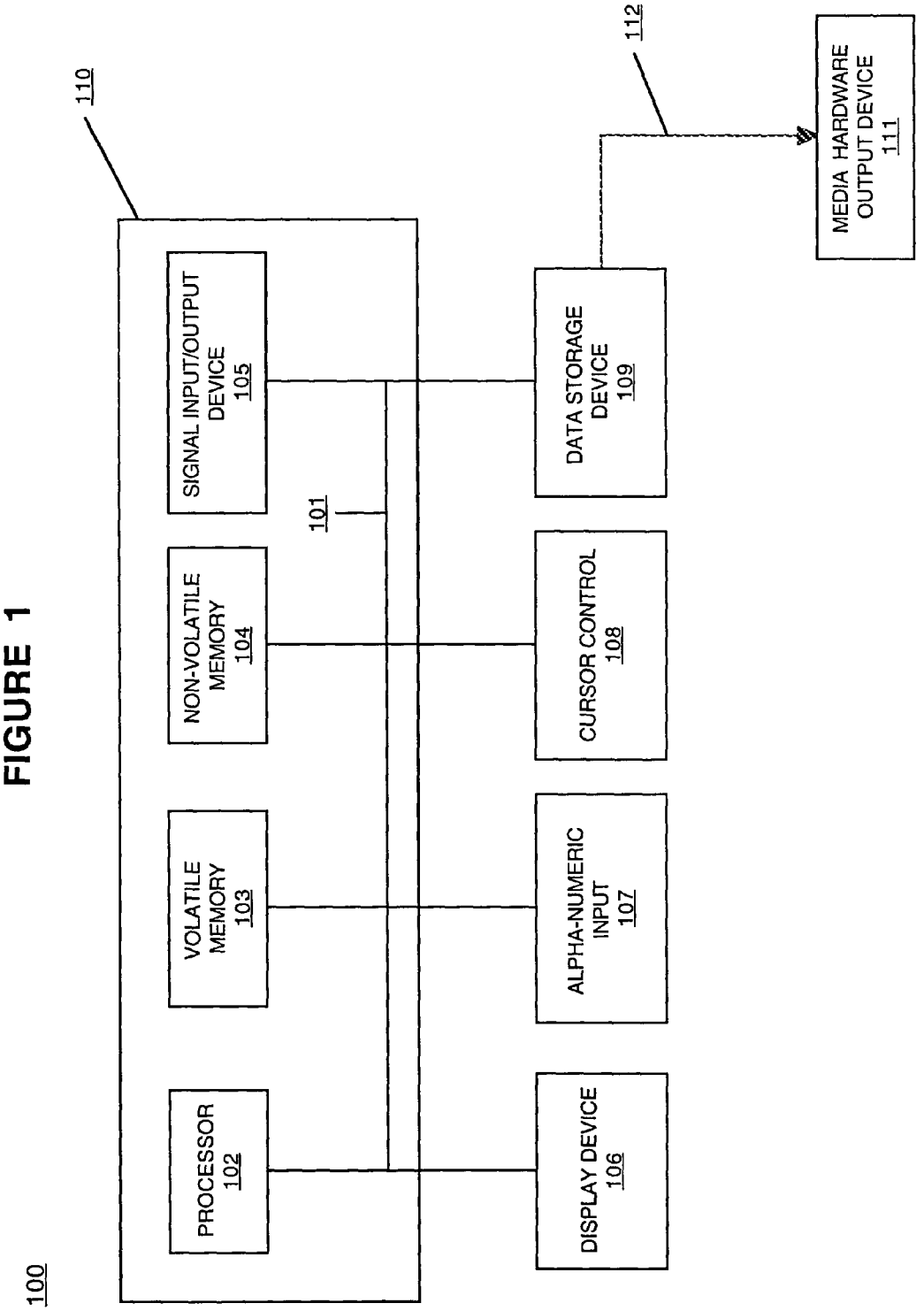


FIGURE 1


100
110
112
101
PROCESSOR 102
VOLATILE MEMORY 103
NON-VOLATILE MEMORY 104
SIGNAL INPUT/OUTPUT DEVICE 105
DISPLAY DEVICE 106
ALPHA-NUMERIC INPUT 107
CURSOR CONTROL 108
DATA STORAGE DEVICE 109
MEDIA HARDWARE OUTPUT DEVICE 111

200

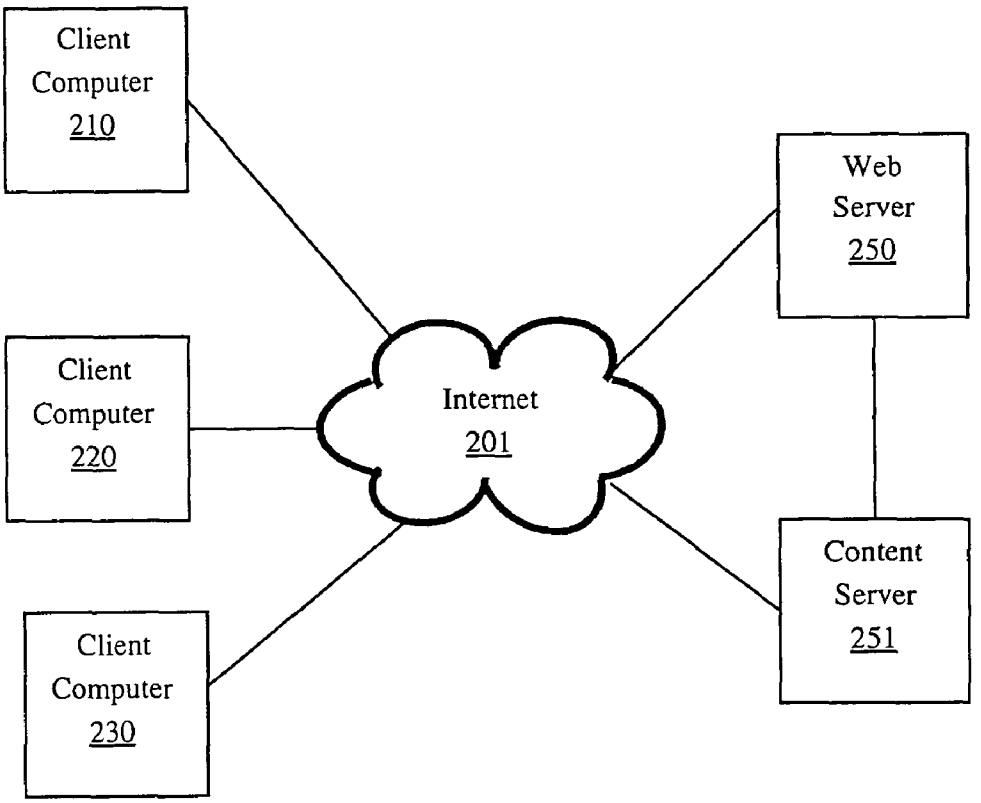

Client Computer 210
Client Computer 220
Client Computer 230
Internet 201
Web Server 250
Content Server 251

FIGURE 2

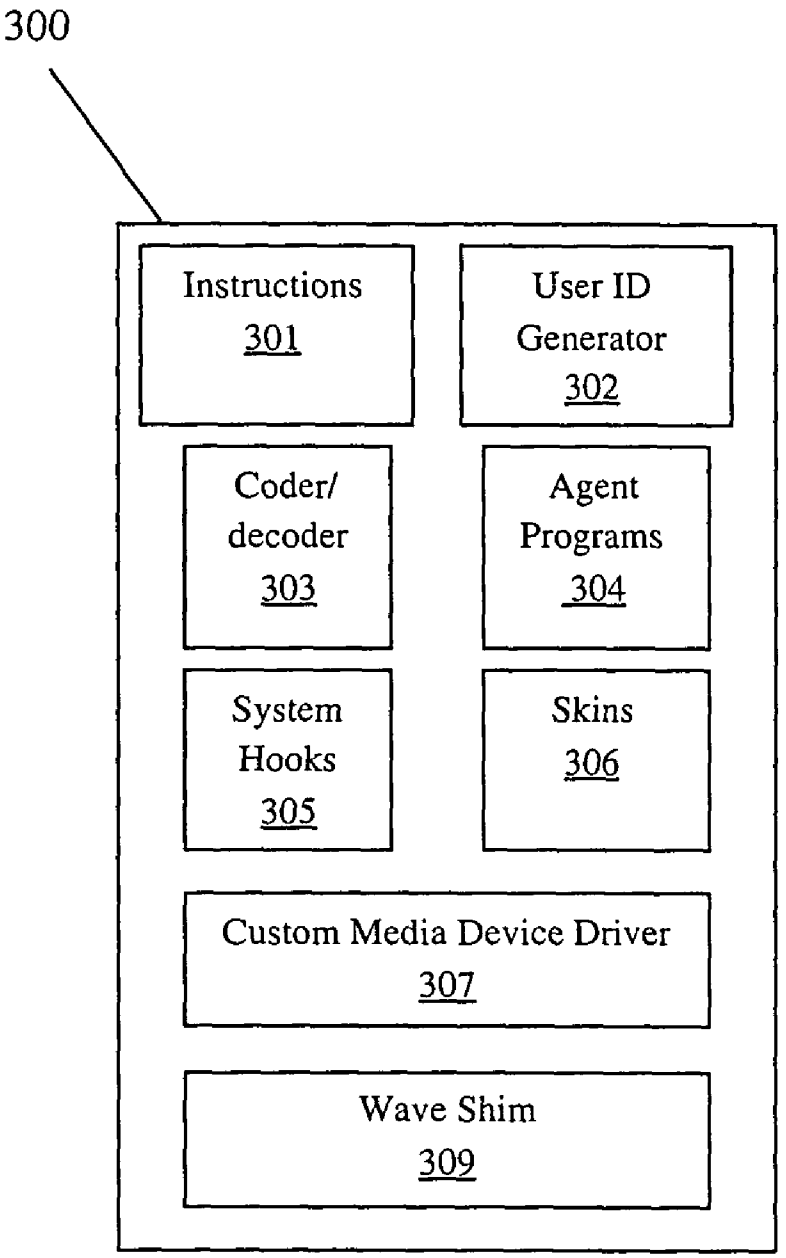

300
Instructions
301
User ID
Generator
302
Coder/
decoder
303
Agent
Programs
304
System
Hooks
305
Skins
306
Custom Media Device Driver
307
Wave Shim
309

FIGURE 3

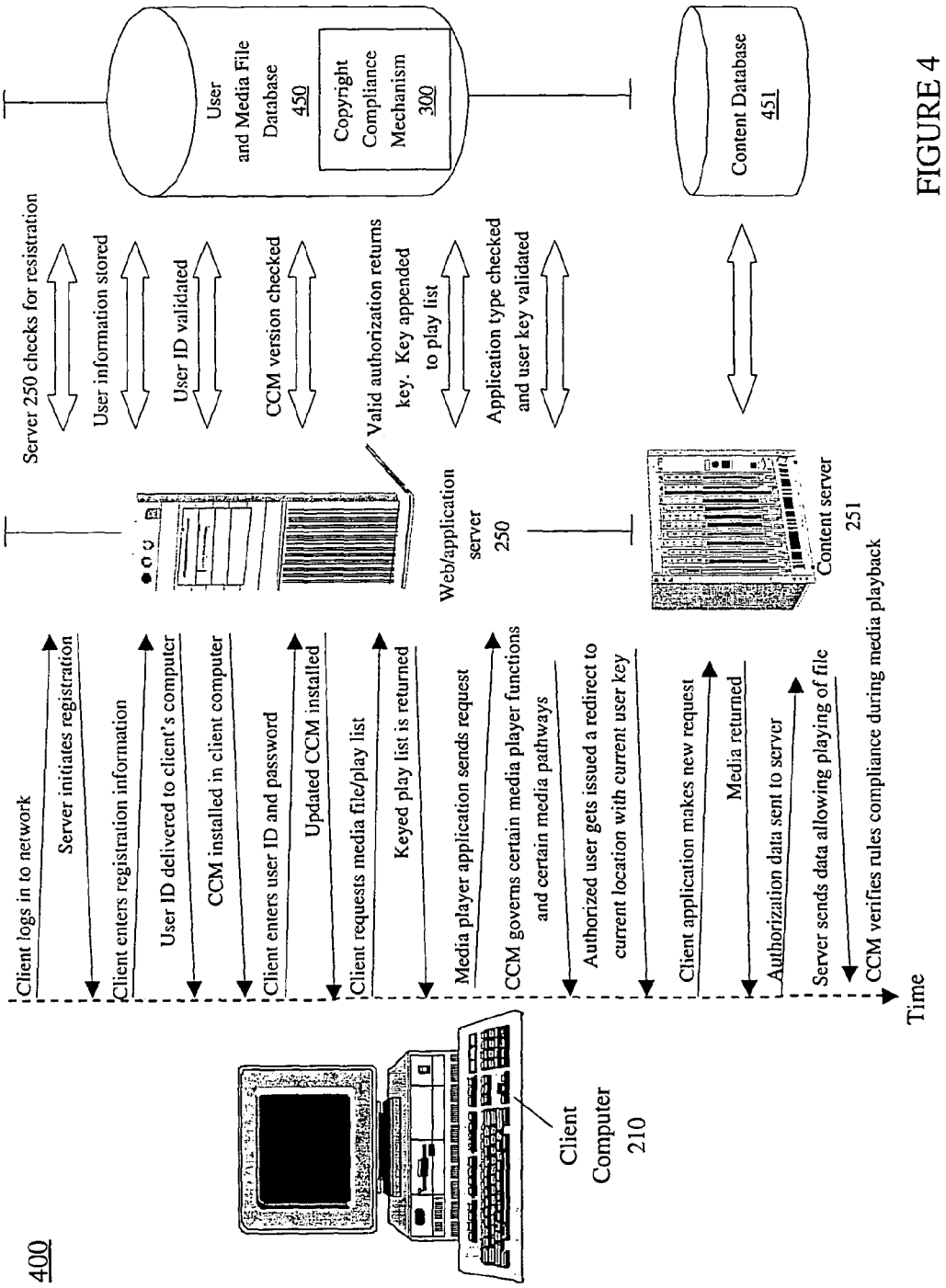

400
Client Computer 210
Time
Client logs in to network
Server initiates registration
Client enters registration information
User ID delivered to client's computer
CCM installed in client computer
Client enters user ID and password
Updated CCM installed
Client requests media file/play list
Keyed play list is returned
Media player application sends request
CCM governs certain media player functions and certain media pathways
Authorized user gets issued a redirect to current location with current user key
Client application makes new request
Media returned
Authorization data sent to server
Server sends data allowing playing of file
CCM verifies rules compliance during media playback
Web/application server 250
Content server 251
Server 250 checks for resistration
User information stored
User ID validated
CCM version checked
Valid authorization returns key. Key appended to play list
Application type checked and user key validated
User and Media File Database 450
Copyright Compliance Mechanism 300
Content Database 451

FIGURE 4

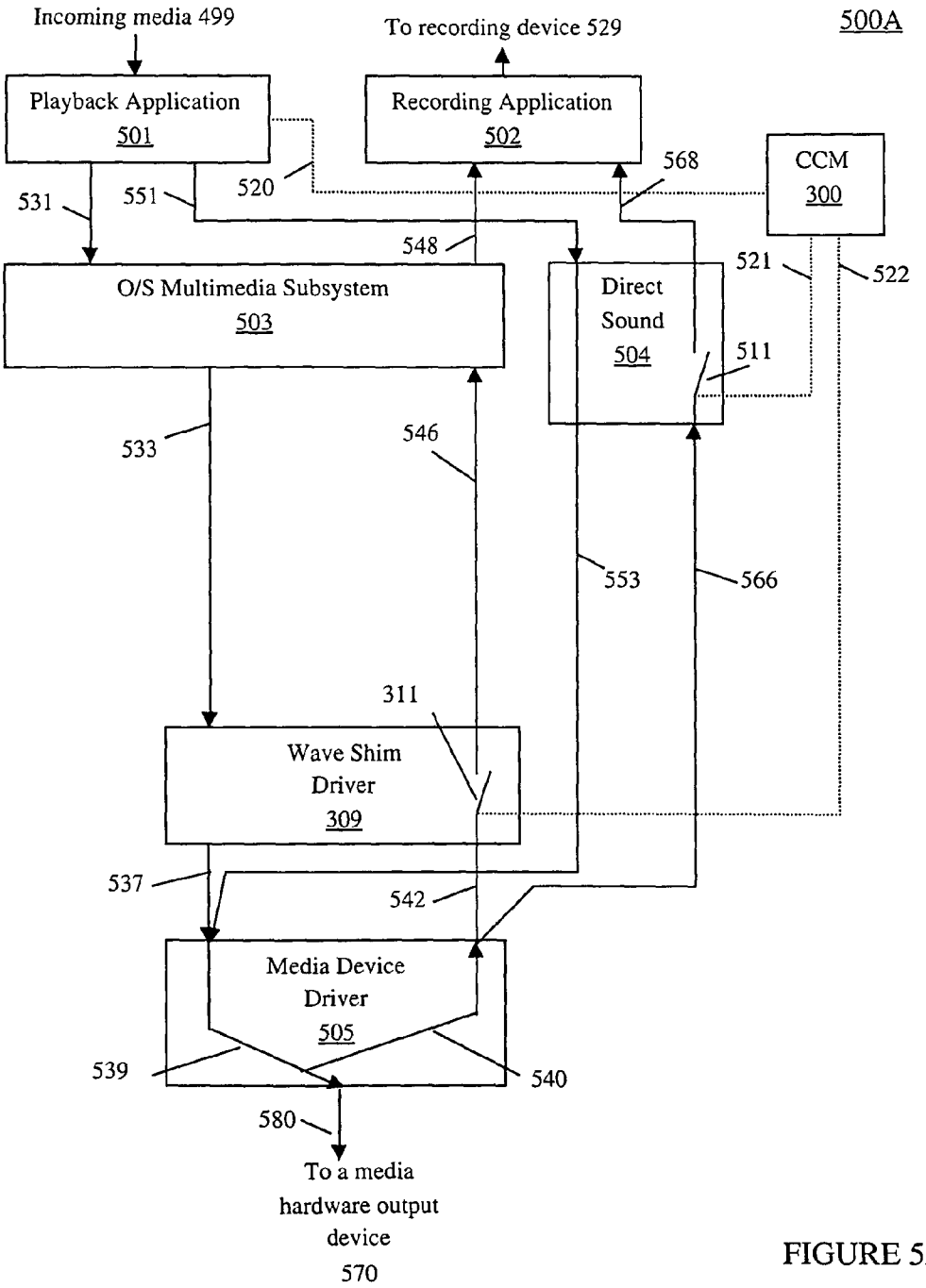

Incoming media 499
To recording device 529
500A
Playback Application
501
Recording Application
502
CCM
300
568
520
531
551
548
521
522
O/S Multimedia Subsystem
503
Direct
Sound
504
511
533
546
553
566
311
Wave Shim
Driver
309
537
542
Media Device
Driver
505
539
540
580
To a media
hardware output
device
570

FIGURE 5A

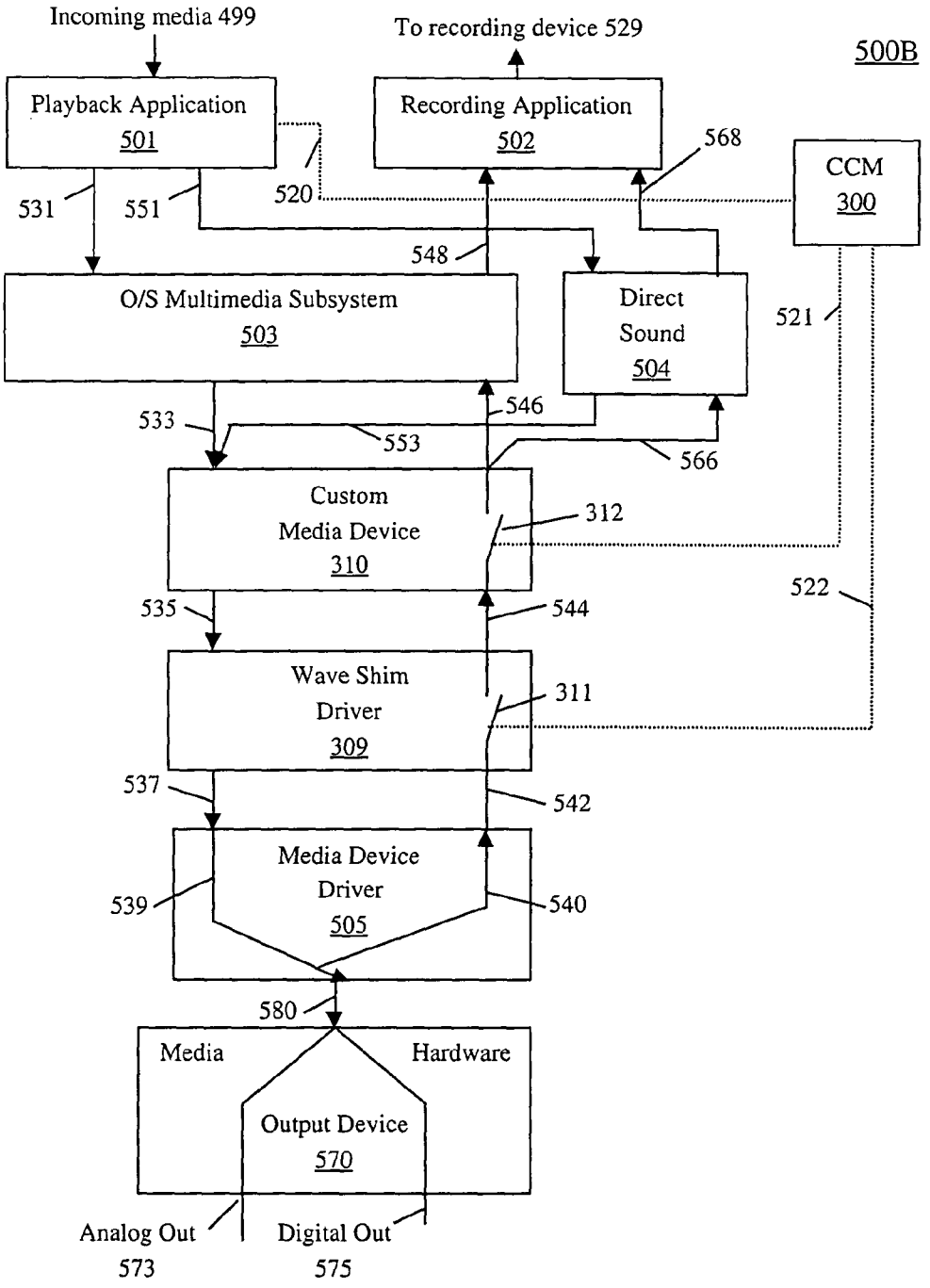

Incoming media 499
To recording device 529
500B
Playback Application
501
Recording Application
502
568
CCM
300
531
551
520
548
O/S Multimedia Subsystem
503
Direct
Sound
504
521
533
546
553
566
Custom
Media Device
310
312
522
535
544
Wave Shim
Driver
309
311
537
542
Media Device
Driver
505
539
540
580
Media
Hardware
Output Device
570
Analog Out
573
Digital Out
575

FIGURE 5B

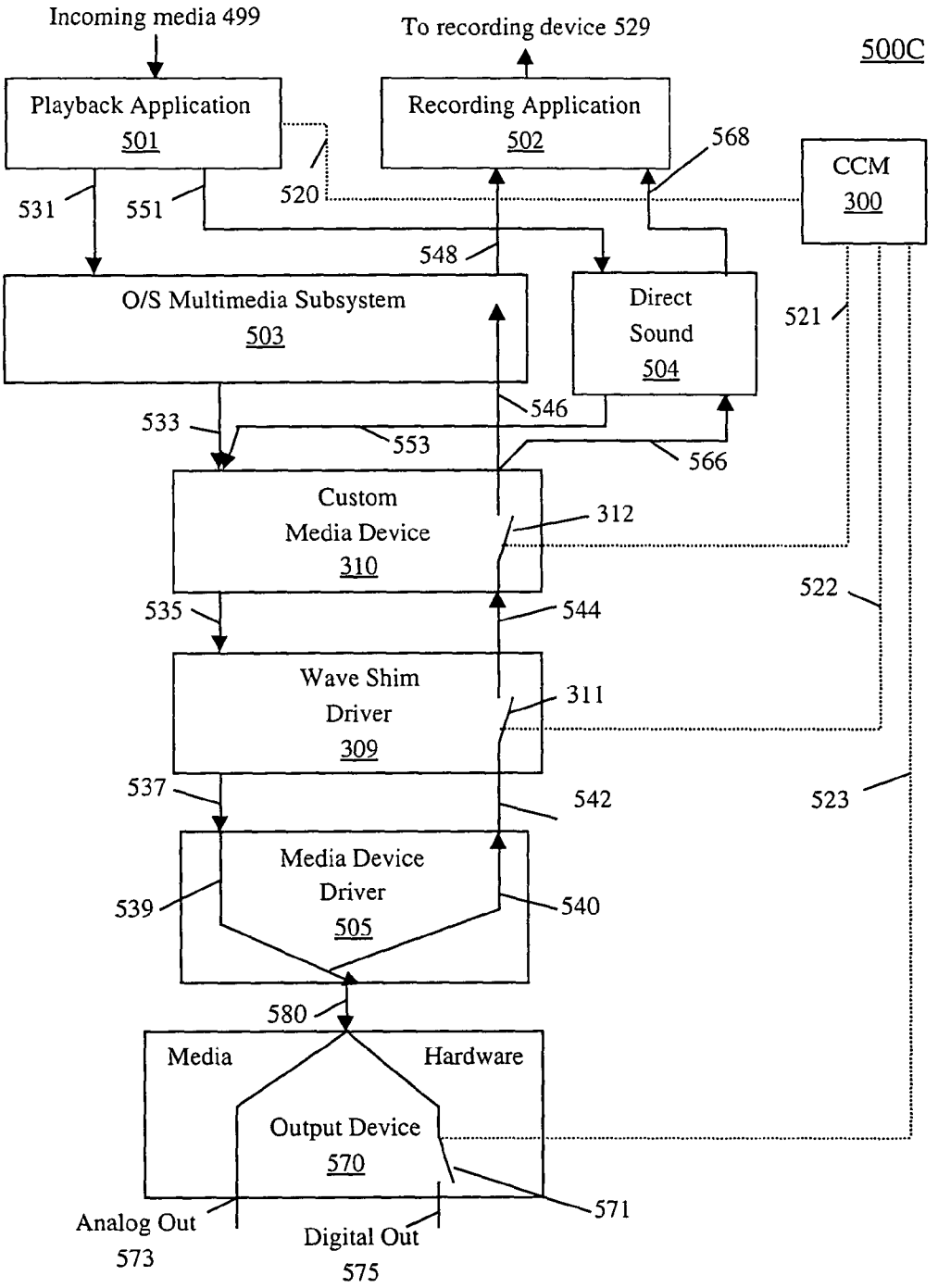

Incoming media 499
To recording device 529
500C
Playback Application
501
Recording Application
502
568
CCM
300
531
551
520
548
O/S Multimedia Subsystem
503
Direct
Sound
504
521
533
546
553
566
Custom
Media Device
310
312
522
535
544
Wave Shim
Driver
309
311
537
542
523
Media Device
Driver
505
539
540
580
Media
Hardware
Output Device
570
571
Analog Out
573
Digital Out
575

FIGURE 5C

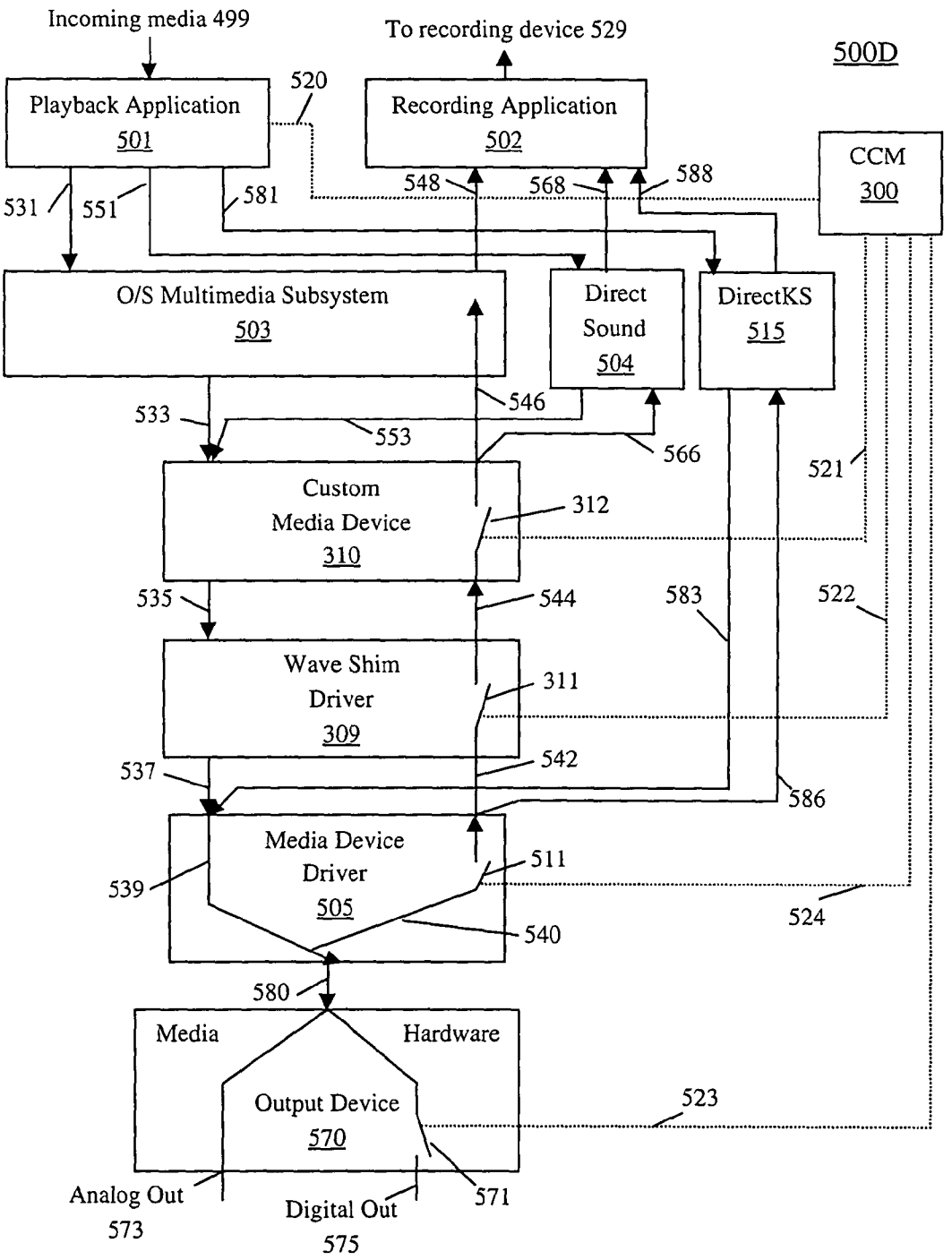

Incoming media 499
To recording device 529
500D
Playback Application
501
520
Recording Application
502
CCM
300
531
551
581
548
568
588
O/S Multimedia Subsystem
503
Direct
Sound
504
DirectKS
515
533
553
546
566
521
Custom
Media Device
310
312
535
544
583
522
Wave Shim
Driver
309
311
537
542
586
Media Device
Driver
505
511
539
540
524
580
Media
Hardware
Output Device
570
523
Analog Out
573
Digital Out
575
571

FIGURE 5D

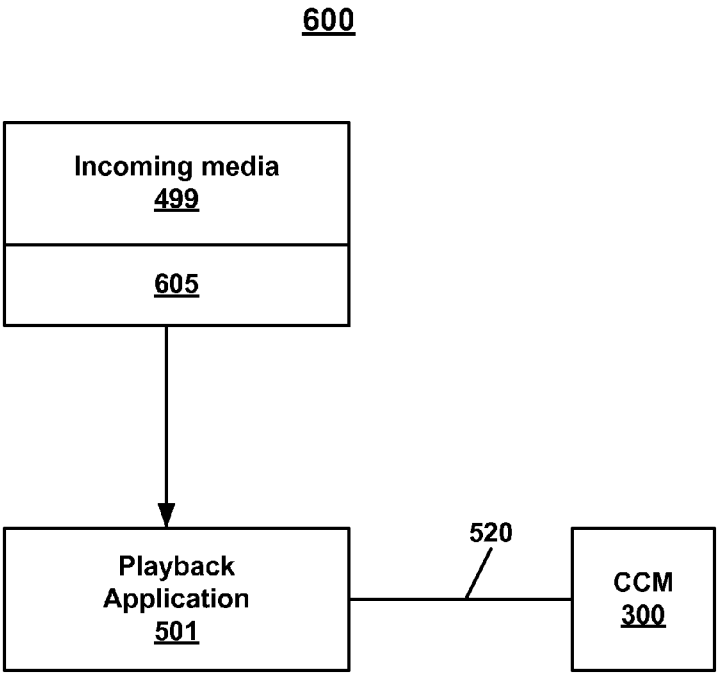

600
Incoming media
499
605
Playback
Application
501
520
CCM
300

FIG. 6

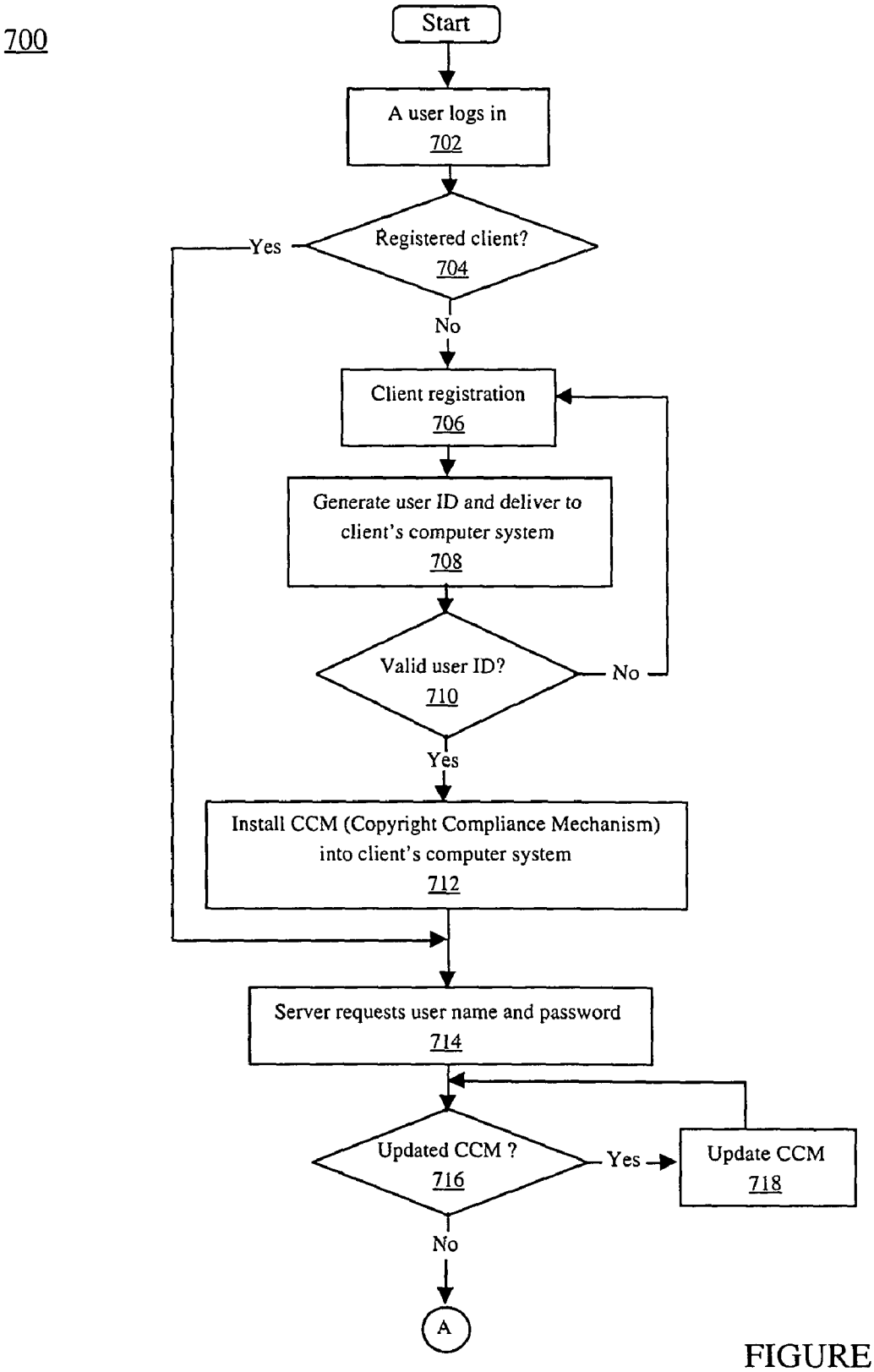

700
Start
A user logs in
702
Registered client?
704
Yes
No
Client registration
706
Generate user ID and deliver to client's computer system
708
Valid user ID?
710
No
Yes
Install CCM (Copyright Compliance Mechanism) into client's computer system
712
Server requests user name and password
714
Updated CCM ?
716
Yes
Update CCM
718
No
A

FIGURE 7A

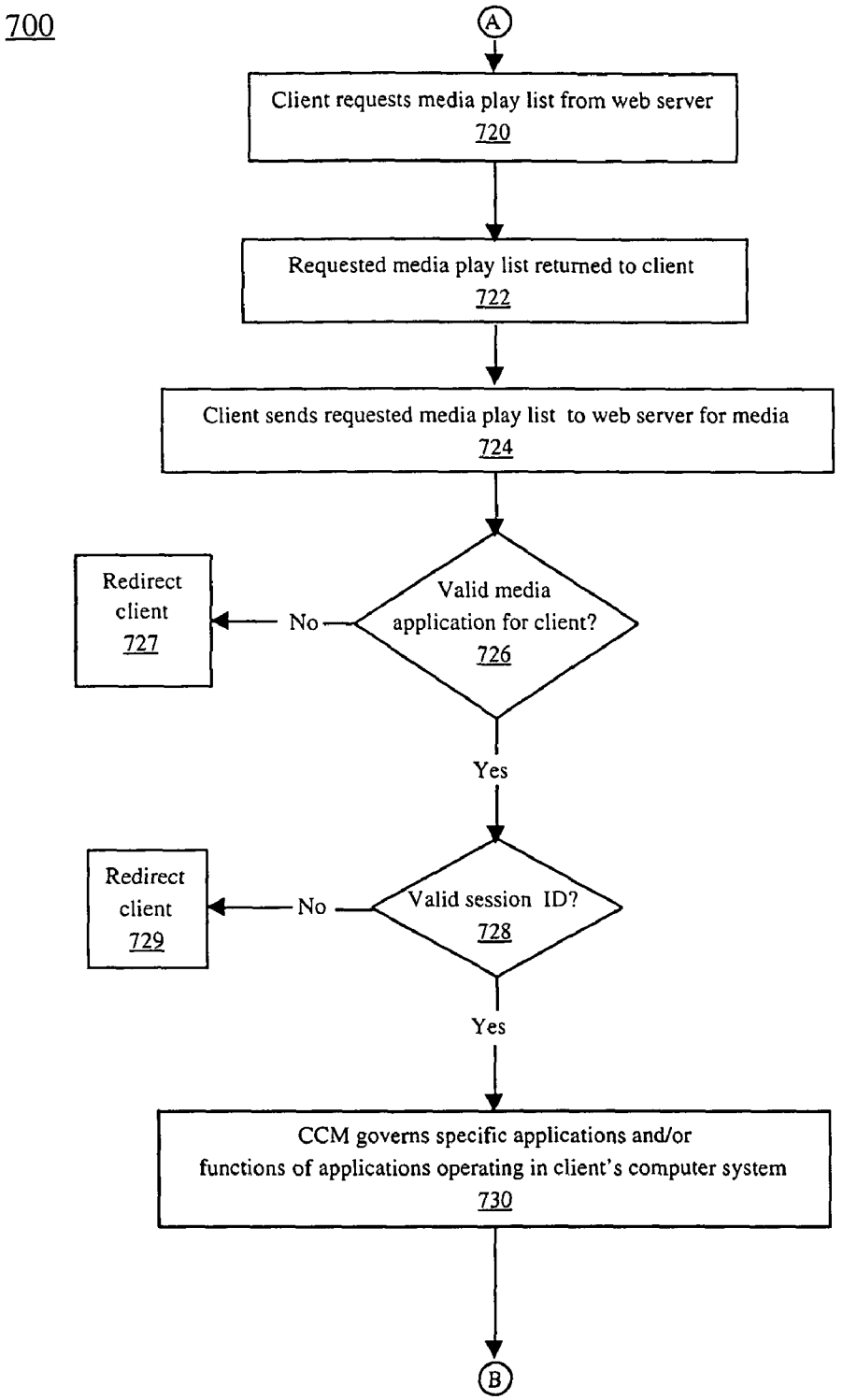

700
A
Client requests media play list from web server
720
Requested media play list returned to client
722
Client sends requested media play list to web server for media
724
Valid media application for client?
726
No
Redirect client
727
Yes
Valid session ID?
728
No
Redirect client
729
Yes
CCM governs specific applications and/or functions of applications operating in client's computer system
730
B

FIGURE 7B

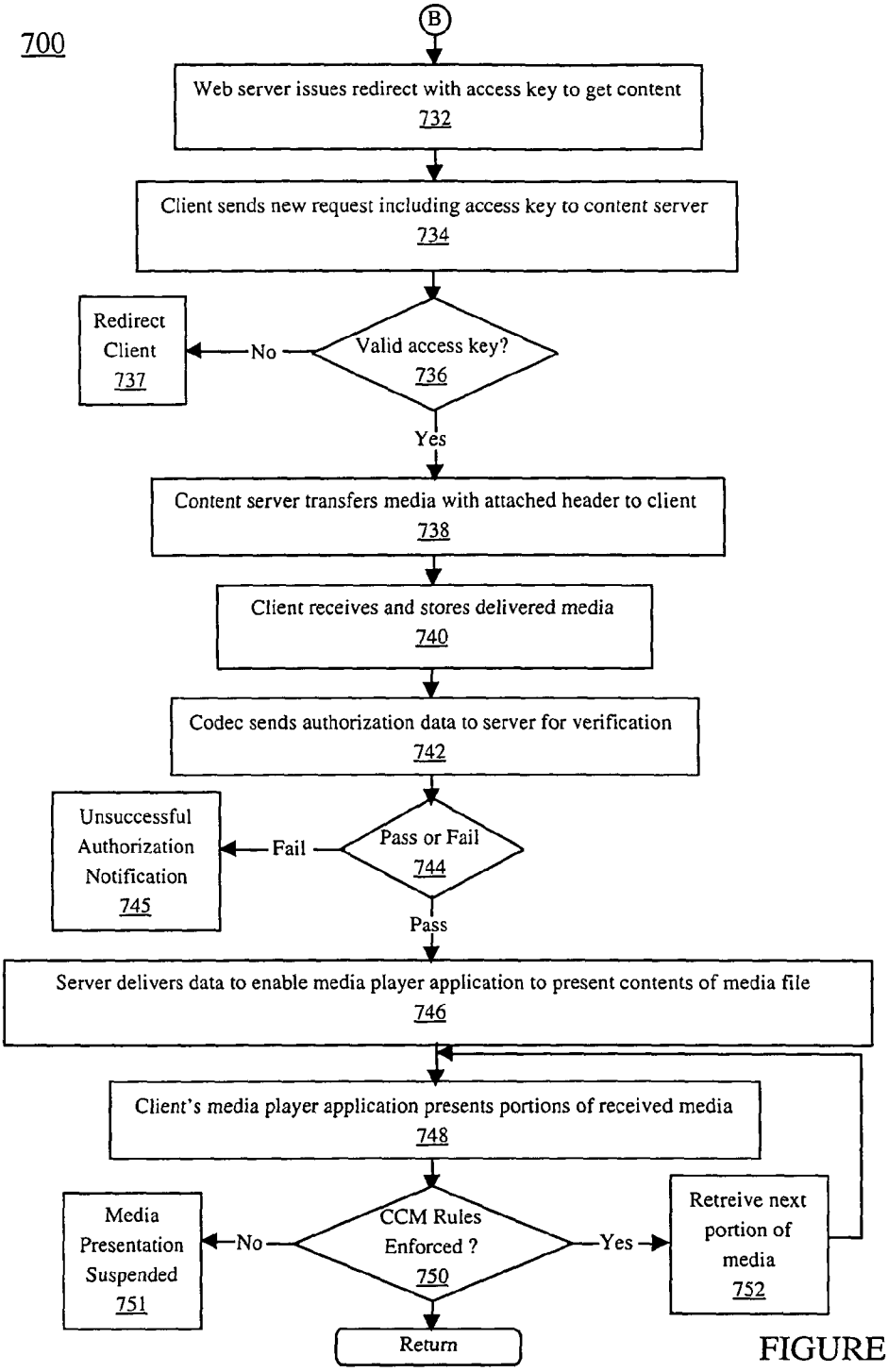

700
B
Web server issues redirect with access key to get content
732
Client sends new request including access key to content server
734
Redirect Client
737
No
Valid access key?
736
Yes
Content server transfers media with attached header to client
738
Client receives and stores delivered media
740
Codec sends authorization data to server for verification
742
Unsuccessful Authorization Notification
745
Fail
Pass or Fail
744
Pass
Server delivers data to enable media player application to present contents of media file
746
Client's media player application presents portions of received media
748
Media Presentation Suspended
751
No
CCM Rules Enforced ?
750
Yes
Retreive next portion of media
752
Return

FIGURE 7C

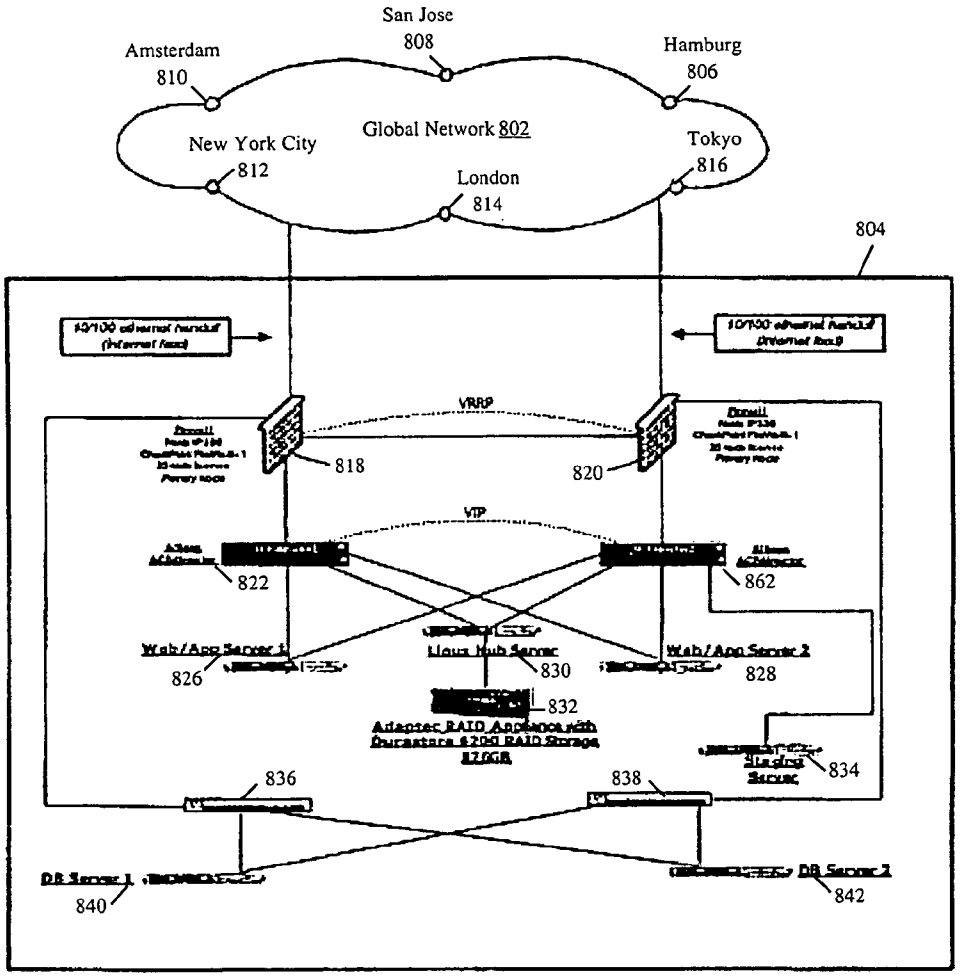

800
San Jose
808
Amsterdam
810
Hamburg
806
Global Network 802
New York City
812
Tokyo
816
London
814
804
VRRP
818
820
VIP
822
862
Web/App Server 1
826
Web/App Server 2
828
830
832
834
836
838
DB Server 1
840
DB Server 2
842

FIGURE 8

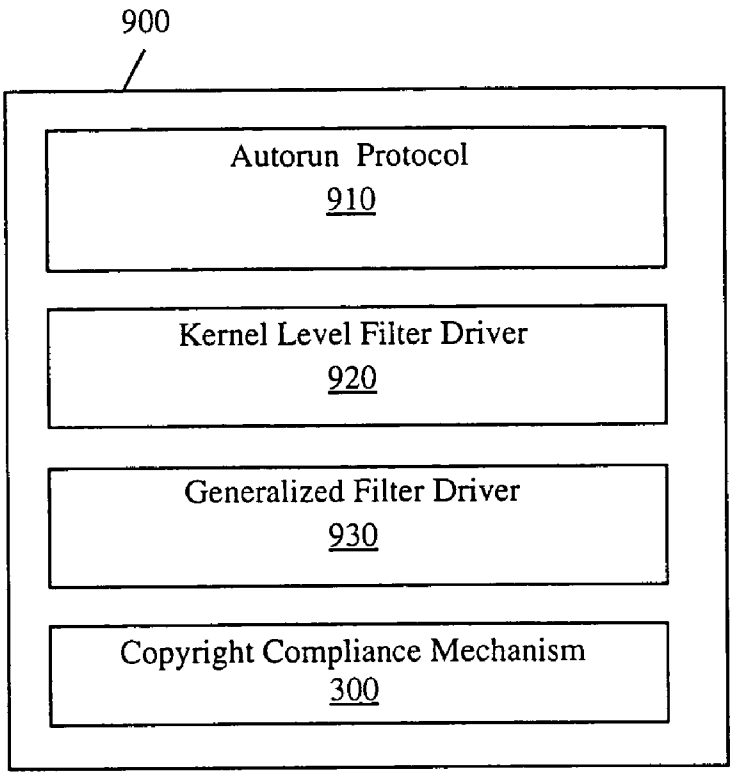

900
Autorun Protocol
910
Kernel Level Filter Driver
920
Generalized Filter Driver
930
Copyright Compliance Mechanism
300

FIGURE 9

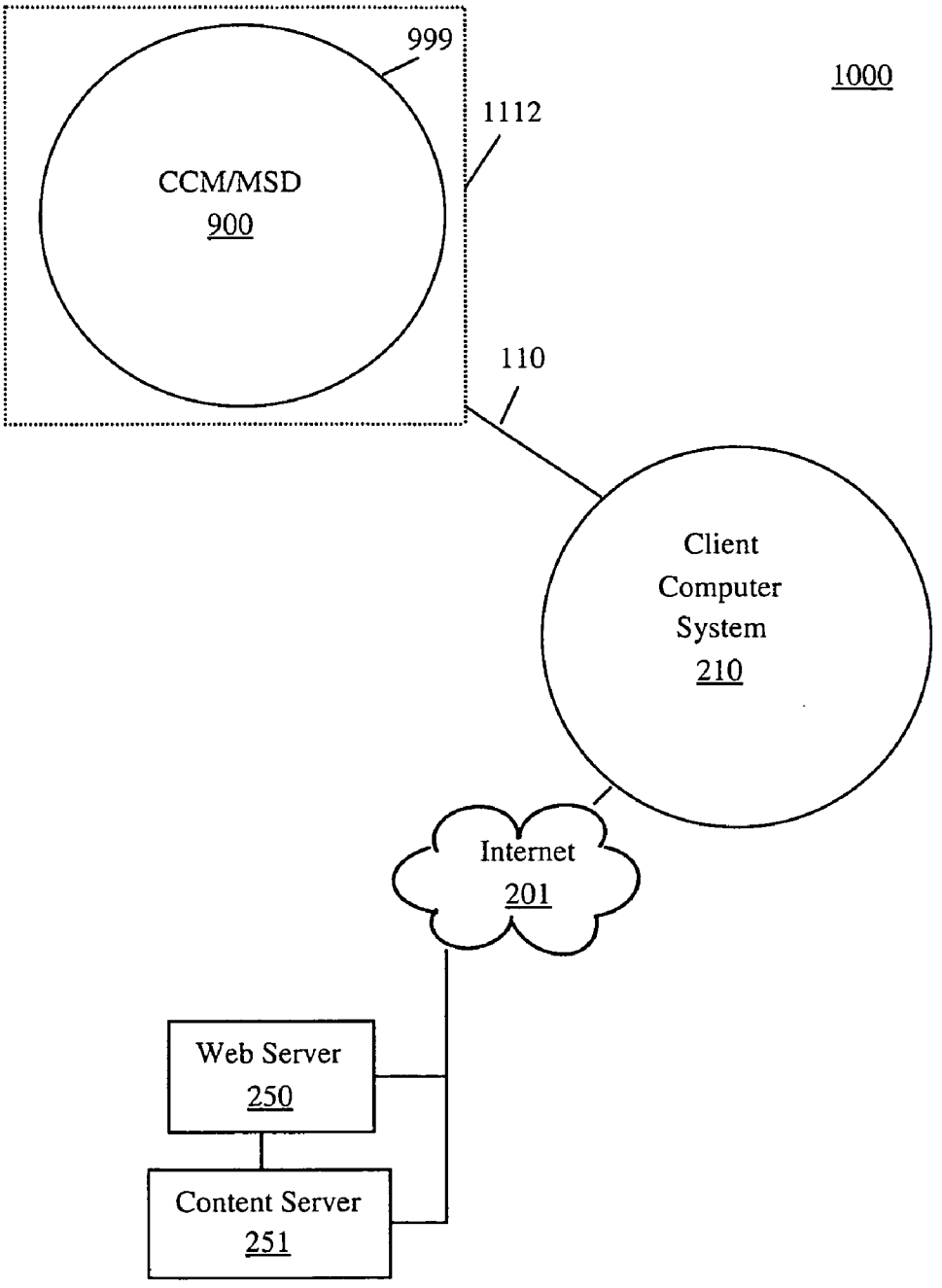

999
1000
1112
CCM/MSD
900
110
Client
Computer
System
210
Internet
201
Web Server
250
Content Server
251

FIGURE 10

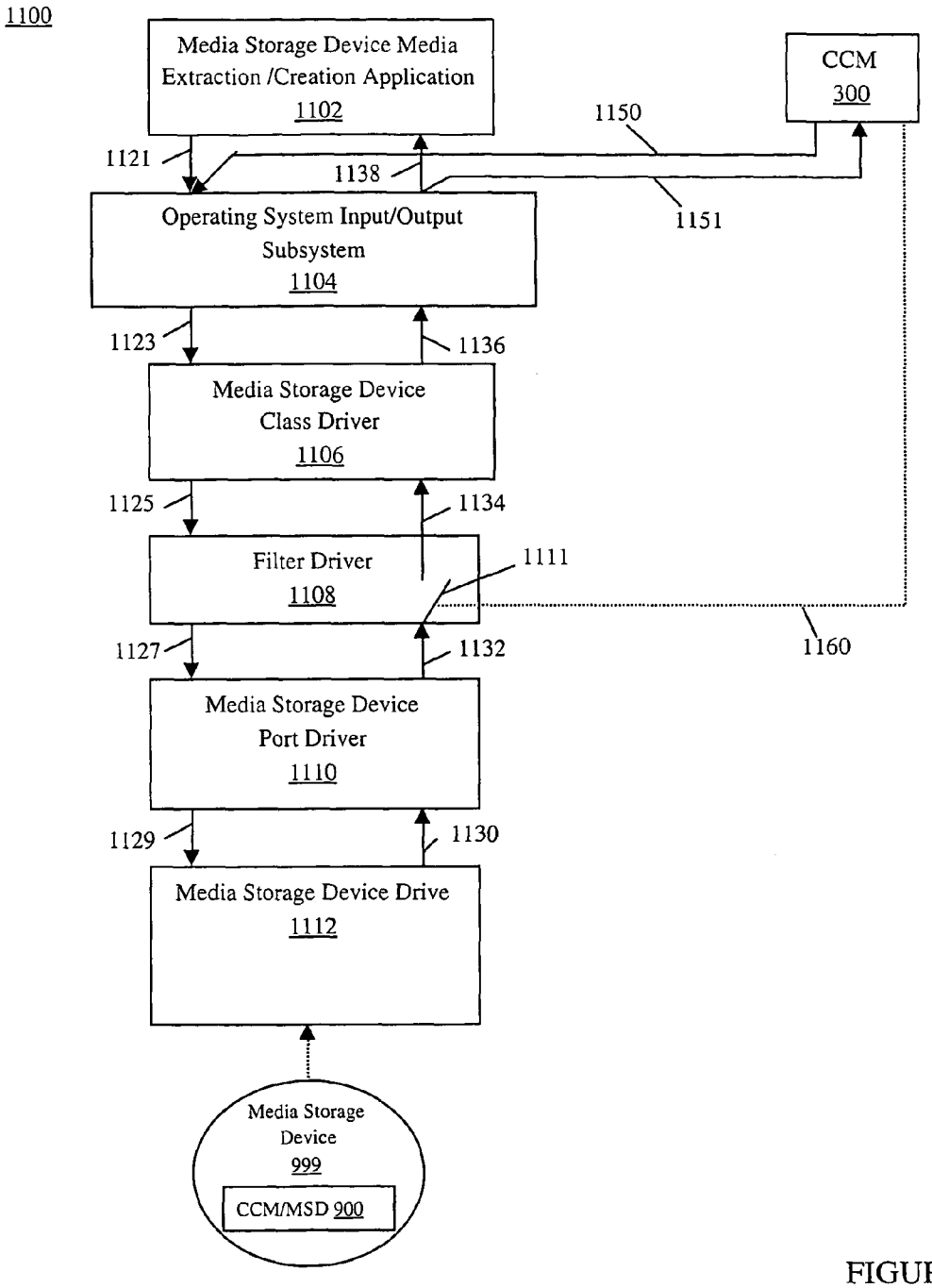

1100
Media Storage Device Media Extraction /Creation Application
1102
CCM
300
1150
1121
1138
1151
Operating System Input/Output Subsystem
1104
1123
1136
Media Storage Device Class Driver
1106
1125
1134
Filter Driver
1108
1111
1160
1127
1132
Media Storage Device Port Driver
1110
1129
1130
Media Storage Device Drive
1112
Media Storage Device
999
CCM/MSD 900

FIGURE 11

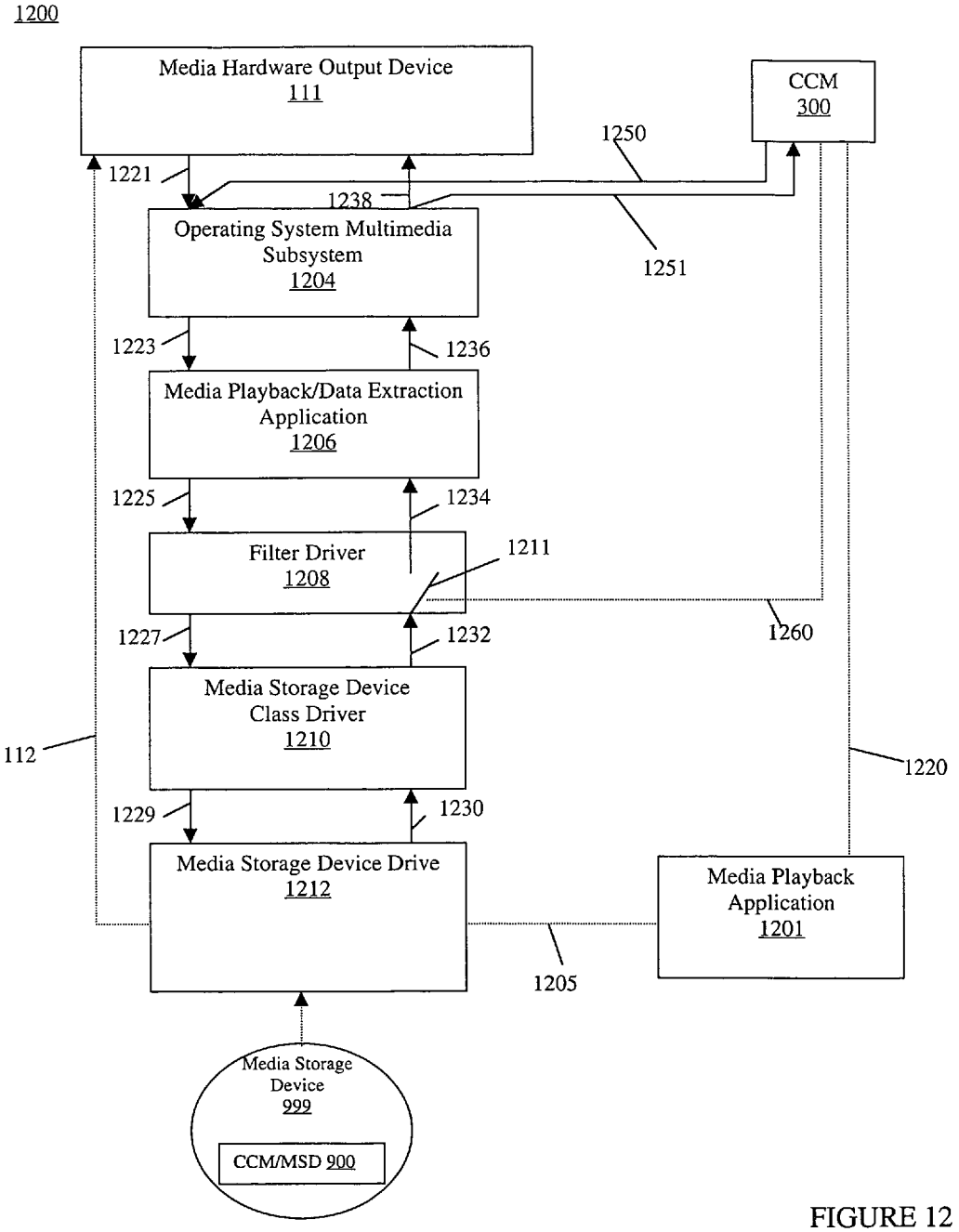

1200
Media Hardware Output Device
111
CCM
300
1250
1221
1238
1251
Operating System Multimedia
Subsystem
1204
1223
1236
Media Playback/Data Extraction
Application
1206
1225
1234
Filter Driver
1208
1211
1260
1227
1232
Media Storage Device
Class Driver
1210
112
1220
1229
1230
Media Storage Device Drive
1212
Media Playback
Application
1201
1205
Media Storage
Device
999
CCM/MSD 900

FIGURE 12

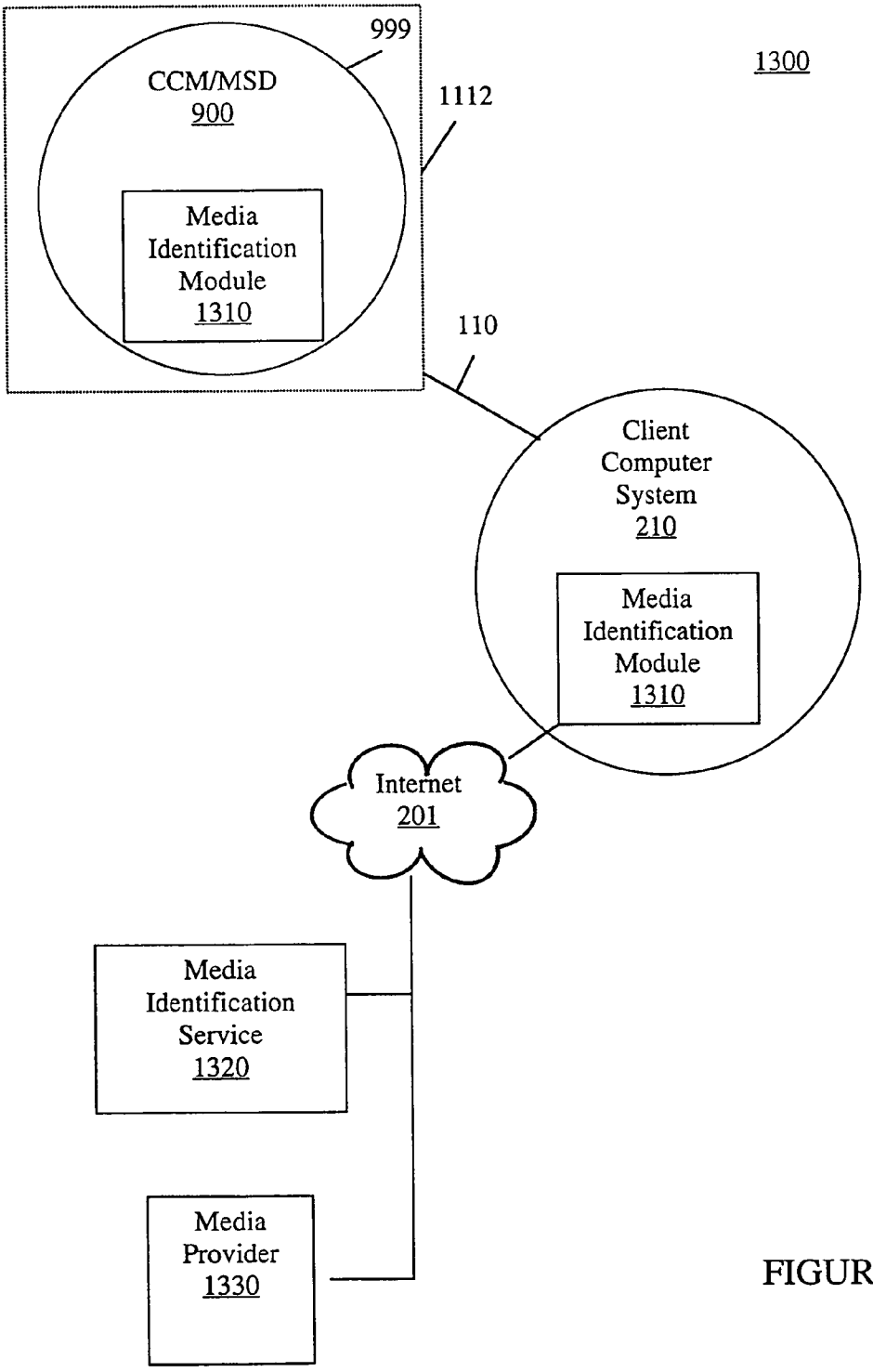

999
CCM/MSD
900
Media
Identification
Module
1310
1112
1300
110
Client
Computer
System
210
Media
Identification
Module
1310
Internet
201
Media
Identification
Service
1320
Media
Provider
1330

FIGURE 13

METHOD AND SYSTEM FOR SELECTIVELY CONTROLLING ACCESS TO PROTECTED MEDIA ON A MEDIA STORAGE DEVICE

FIELD OF THE INVENTION

The present invention relates to electronic media. More particularly, the present invention relates to preventing unauthorized recording of electronic media disposed on a media storage device.

BACKGROUND OF THE INVENTION

One of the problems faced in attempting to effectively control media files on a media storage device, e.g., a compact disk (CD), in a secure and controlled manner is that current media storage devices need to be compatible with both home media storage device players, e.g., a CD, digital versatile disk (DVD) or other player, and media storage device drives which may be connected to a computer system. Many of these players/drives were designed in 1982, and the media storage device needs to be backwards compatible with those players/drives.

Media storage device drives are essentially data transducers, meaning they convert bit stream data into electronic waveform that is output, e.g., as an analog waveform, harmonic waveform, to speakers and/or other devices to render sound.

A computer system is more problematic because in addition to its transducing abilities, it may also be: A) a morphogenic system, meaning that a user can take data, reorganize the data, and morph it into other forms on the computer; and/or B) a replicator system, meaning that it can also copy or capture or store or reproduce the data. As a result, if a user can digitally access media stored on a CD using a computer, they reorganize the data and/or reproduce and distribute unauthorized copies of the data. This is especially problematic for owners of copyright protected media such as music, computer software programs, multimedia presentations such as movies, etc.

The data format of a media storage device, e.g., a CD, was designed in 1982 and it was not designed with any security in mind. This is because it was designed to be effective media for data transduction, and as such, did not include provisions for effective copyright protection or Digital Rights Management (DRM).

Some companies that have attempted to provide copyright protection are doing so in a way that is designed to exploit inefficiencies or discrepancies between the home player and the media storage device drive connected to a computer system. To provide media files for both players/drives, those companies do multisession tracks. The media storage device, e.g., CD/DVD, delivers two sets of data. In one example, a plus sign may be used to indicate that the CD/DVD is a mixed disc, having both data for the computer and music for the home machine Double clicking on the icon initiates autoplay of the CD/DVD, which in one example, activates a player provided by the CD/DVD.

One set of streaming data is for the media storage device drive connected to a computer system (generally requested by a proprietary player and delivered in a highly compressed bit form to the computer/user) that may have some kind of digital rights management. For example, when a media storage device is inserted into a device drive connected to a computer system, the user may be presented with a proprietary player having a bit rate of approximately 128 Kbps, which can present a highly compressed version of the original to the user so they will be able to experience the media file.

Disadvantageously, a data stream of 128 Kbps is severely degraded from the original media. In many instances, common compression ratios of original waveforms are approximately a ten to one compression ratio. A ten to one compression ratio typically results in degradation that is readily audible. Thus, the user would be experiencing poor quality sound.

The other set of data stored by a CD/DVD is an audio file that is accessed by a home music or video system and the user is able to experience the media file. Inserting the media storage device into the home audio/video device enables the user to experience the media file in an uncompressed high quality manner, replicating the original form of the media file.

In many instances, all that is needed is a click of the mouse to strip the DRM protection off the media storage device, and the media file becomes available for reproduction and distribution. Alternative means to defeat copyright protection of media files can be as easy as using a magic marker technique. In this technique, a user marks the outer track on a media storage device, e.g., a CD, with a permanent marker, e.g., a Sharpie. When the computer tries to read the first track, it fails, and by default, then reads the next track, usually where the music begins.

Additionally, the media file copyright holders are being sold on the premise that a degraded media file is better than the original because you can't control the original on the computer. Therefore, users may be less likely to use a computer to record/capture/reproduce a poor quality version. Once the user does capture the media file, it is a mediocre sounding copy. This fundamental concept of recording companies giving a less than ideal data version on the CD is in the hope that the lack of sound quality will deter users from recording, copying, etc., the media files.

Alternative methods to provide protection and DRM include the use of time clock inefficiencies. For example, one method is to indicate to the computer system that a media file begins further back than where it actually does, which can introduce a series of numerous errors.

Home machines, e.g., CD/DVD players coupled with stereos, in comparison to CD/DVD drives coupled with a computer system, are extremely tolerant of errors. Home CD/DVD players are designed to read from CDs and DVDs that have been mistreated, e.g., scratched, left out of their jewel case, etc. The home players have substantial error correcting capabilities. Thus, if a CD/DVD has data that was given a negative start time, the home players detects that there is no such thing as a negative start time, and then the home player commences playback.

However, computers are more "gullible," meaning that they believe what you tell them. So if the CD/DVD indicates a negative start time, then the media storage device drive connected to a the computer system may not be able to play a particular media file.

There are also legacy issues and compatibility issues. The consumer is being given a faulty product. In many instances, a disclaimer commonly found on current CDs and DVDs says that if the CD/DVD does not function, return the CD/DVD for exchange. Many users may find this intermittent functionality unacceptable and having to return CD/DVD may cause the user to postpone or, more severely, cancel future CD/DVD purchases.

Applications are readily available via the Internet for the express purpose of producing an exact audio copy of media files on a media storage device. One example is Exact Audio Copy, a freeware software program freely available on the

Internet which produces an exact audio copy in. wav file format. Using Exact Audio Copy, circumventing existing protection can be accomplished without modification to the existing technology. The Exact Audio Copy application bypasses the multisession data tracks and goes directly to the audio tracks. This can be accomplished by loading the Exact Audio Copy onto a computer, inserting a CD, and pressing a button or two to copy the audio tracks.

Additionally, there are "ripping" applications, readily available via the Internet, that read the redbook, which enables the ripping application to access the table of contents, and the ripping application goes to the audio tracks where it can "rip" the audio or video file.

Further, DRM protection methods implemented as a stand alone device, meaning that the DRM and copy protection resides in software that resides on the disk are also problematic. This is because when circumvention of the DRM on the media storage device occurs, little if anything can be done because the DRM controls are also bypassed. There may not be any communication with the computer or the Internet.

Software DRM solutions are additionally problematic for CDs and DVDs because they frequently do not provide DRM compliance, and it is foreseen that software solutions will not provide DRM protection in the future, particularly with the introduction of new computer operating systems and new media formats. These types of software DRM solutions are difficult to morph into a secure format once operating systems change.

In many instances, demo media files are being copied and released prior to release of the actual media file. In other instances, unauthorized copies of protected media files, e.g., CDs and/or DVDs are being released before the release of the music and/or the movies. In some instances, unauthorized copies of protected media files are outselling legally produced media files.

Further, many of the media player/recorder applications are designed to capture and record incoming media files in a manner that circumvents controls implemented by a media player application inherent to an operating system, e.g., QuickTime for Apple, MediaPlayer for Windows™, etc., or downloadable from the Internet, e.g., RealPlayer, LiquidAudio, or those provided by webcasters, e.g., PressPlay, for controlling unauthorized recording of media files. Also, many digital recording devices, e.g., mini-disc recorders, MP3 recorders, and the like, can be coupled to a digital output of a computer system, e.g., a USB port, a S/Pdif out, and the like, to capture the media file.

Thus, once the data on the media storage device is digitally accessed and/or stored by a computer system, the likelihood of defeating existing DRM protection methods is greatly increased because the data can be stored for an indefinite period of time. While the copyright holders want to distribute their material to the widest possible audience, they may also want to prevent digitally accessing the material because, given enough time, any method for providing DRM protection can be circumvented. Therefore, it is desired to prevent a computer system from digitally accessing a copyright protected media file to prevent unauthorized storage, transformation, and/or distribution of the media while still allowing a user to use and enjoy the media.

It is also desired to prevent recording applications, such as Total Recorder, Sound Forge, and numerous others, that are adapted to establish a connection with a kernel level driver operable within an operating system to capture and redirect the media file to create an unauthorized reproduction of a media file. It is also desired to prevent recording applications, such as Total Recorder, Sound Forge, and numerous others, that are adapted to establish a connection with a kernel level driver operable within an operating system to capture and redirect the media file to create an unauthorized reproduction of a media file. It is also desired to prevent recording applications from accessing a kernel-mode media device driver and making unauthorized copies of copyrighted material through some available network, e.g., wireline, wireless, P2P, etc., or through a communicative coupling. It is further desirable to prevent access to a kernel based media device driver by a recording application for the purpose of making unauthorized copies of media files from or to alternative sources, e.g., CD players, DVD players, removable hard drives, personal electronic and/or recording devices, e.g., MP3 recorders, and the like. Finally, it is desirable to allow presentation of copyrighted material while preventing a computer system from digitally accessing the copyrighted material.

Current methods of preventing unauthorized reproduction of protected medial files on media storage device are inadequate.

SUMMARY OF THE INVENTION

Accordingly, a need exists for a method and system that controls unauthorized reproduction of protected media files disposed on a media storage device. Embodiments of the present invention satisfy the above mentioned needs.

A method of preventing unauthorized reproduction of media disposed on a media storage device according to one embodiment is described. The method comprises installing a compliance mechanism on the computer system. The compliance mechanism is communicatively coupled with the computer system when installed thereon. The compliance mechanism is for enforcing compliance with a usage restriction applicable to the media. The method further includes obtaining control of a data input pathway operable on the computer system. The method further includes accessing data, that is disposed on the media storage device, that is associated with the usage restriction. The method further includes preventing the computer system from accessing the media digitally via the data pathway while enabling presentation of the protected media.

In another embodiment, a system for selectively controlling access to protected media on a media storage device is described. In one embodiment, the system is comprised of a compliance mechanism disposed on the media storage device. The compliance mechanism is configured to be installed on and communicatively coupled with a computer system. The compliance mechanism is for complying with a usage restriction applicable to the protected media. The system further includes a device drive coupled with the computer system for accessing the media storage device. The device drive is communicatively coupled with an analog sound rendering device coupled with the computer system. The system further includes the compliance mechanism being configured to prevent accessing the protected media via a digital data pathway on the computer system while presenting the protected media via the analog sound rendering device.

These and other objects and advantages of the present invention will no doubt become obvious to those of ordinary skill in the art after having read the following detailed description of the preferred embodiments which are illustrated in the various drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and form a part of this specification, illustrate embodiments

of the invention and, together with the description, serve to explain the principles of the invention.

FIG. **1** is a block diagram of an exemplary computer system that can be utilized in accordance with an embodiment of the present invention.

FIG. **2** is a block diagram of an exemplary network environment that can be utilized in accordance with an embodiment of the present invention.

FIG. **3** is a block diagram of a copyright compliance mechanism in accordance with an embodiment of the present invention.

FIG. **4** is an exemplary system for implementing a copyright compliance mechanism in accordance with an embodiment of the present invention.

FIG. **5**A is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized recording of media files, in accordance with one embodiment of the present invention.

FIG. **5**B is a data flow block diagram showing an implementation of a component of a copyright compliance mechanism for preventing unauthorized recording of media files, in accordance with another embodiment of the present invention.

FIG. **5**C is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized output of media files, in accordance with one embodiment of the present invention.

FIG. **5**D is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized output of media files through media file capture at a kernel level, in accordance with one embodiment of the present invention.

FIG. **6** is a block diagram of an environment for preventing unauthorized copying of a media file, in accordance with one embodiment of the present invention.

FIGS. **7**A, **7**B, and **7**C are a flowchart of steps performed in accordance with an embodiment of the present invention for providing a copyright compliance mechanism to a network of client and server computer systems.

FIG. **8** is a diagram of an exemplary global media delivery system in which a copyright compliance mechanism can be implemented in accordance with an embodiment of the present invention.

FIG. **9** is a block diagram of a copyright compliance mechanism installable from a media storage device in accordance with one embodiment of the present invention.

FIG. **10** is a block diagram of a communicative environment for controlling unauthorized reproduction of protected media files disposed on a media storage device, in accordance with one embodiment of the present invention.

FIG. **11** is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized reproduction of a protected media file located on a media storage device, in accordance with one embodiment of the present invention.

FIG. **12** is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized recording of media files, in accordance with one embodiment of the present invention.

FIG. **13** is a block diagram of a communicative environment for identifying media disposed on a media storage device in accordance with embodiments of the present invention.

DETAILED DESCRIPTION

Reference will now be made in detail to embodiments of the invention, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with embodiments, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternatives, modifications, and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims. Furthermore, in the following detailed description of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, to one of ordinary skill in the art, the present invention may be practiced without these specific details. In other instances, well known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of the present invention.

Some portions of the detailed description which follows are presented in terms of procedures, logic blocks, processing, and other symbolic representations of operations on data bits within a computing system or digital memory system. These descriptions and representations are the means used by those skilled in the data processing art to most effectively convey the substance of their work to others skilled in the art. A procedure, logic block, process, etc., is herein, and generally, conceived to be a self-consistent sequence of steps or instructions leading to a desired result. The steps are those involving physical manipulations of physical quantities. Usually, though not necessarily, these physical manipulations take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated in a computing system or similar electronic computing device. For reasons of convenience, and with reference to common usage, these signals are referred to as bits, values, elements, symbols, characters, terms, numbers, or the like, with reference to the present invention.

It should be borne in mind, however, that all of these terms are to be interpreted as referencing physical manipulations and quantities and are merely convenient labels and are to be interpreted further in view of terms commonly used in the art. Unless specifically stated otherwise as apparent from the following discussions, it is understood that discussions of the present invention refer to actions and processes of a computing system, or similar electronic computing device that manipulates and transforms data. The data is represented as physical (electronic) quantities within the computing system's registers and memories and is transformed into other data similarly represented as physical quantities within the computing system's memories or registers, or other such information storage, transmission, or display devices.

In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. To one skilled in the art, the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to avoid obscuring the present invention.

Embodiments of the present invention are discussed primarily in the context of a network of computer systems such as a network of desktop, workstation, laptop, handheld, and/or other portable electronic device. For purposes of the present application, the term "portable electronic device" is not intended to be limited solely to conventional handheld or portable computers.

Instead, the term "portable electronic device" is also intended to include many mobile electronic devices. Such mobile devices include, but are not limited to, portable CD players, MP3 players, mobile phones, portable recording devices, satellite radios, portable video playback devices

(digital projectors), personal video eyewear, and other personal digital devices. Additionally, embodiments of the present invention are also well suited for implementation with theater presentation systems for public and/or private presentation in theaters, auditoriums, convention centers, etc.

FIG. **1** is a block diagram illustrating an exemplary computer system **100** that can be used in accordance with embodiments of the present invention. It is noted that computer system **100** can be nearly any type of computing system or electronic computing device including, but not limited to, a server computer, a desktop computer, a laptop computer, or other portable electronic device. Within the context of embodiments of the present invention, certain discussed processes, procedures, and operations can be realized as a series of instructions (e.g., a software program) that reside within computer system memory units of computer system **100** and are executed by a processor(s) of computer system **100**. When executed, the instructions cause computer system **100** to perform specific actions and exhibit specific behavior which is described in detail herein.

Computer system **100** of FIG. **1** comprises an address/data bus **101** for communicating information, one or more central processors **102** coupled to bus **101** for processing information and instructions. Central processor(s) **102** can be a microprocessor or any alternative type of processor. Computer system **100** also includes a computer usable volatile memory **103**, e.g., random access memory (RAM), static RAM (SRAM), dynamic RAM (DRAM), synchronous dynamic RAM (SDRAM), double data rate RAM (DDR RAM), etc., coupled to bus **101** for storing information and instructions for processor(s) **102**. Computer system **100** further includes a computer usable non-volatile memory **104**, e.g., read only memory (ROM), programmable ROM (PROM), electronically programmable ROM (EPROM), electrically erasable PROM (EEPROM), flash memory (a type of EEPROM), etc., coupled to bus **101** for storing static information and instructions for processor(s) **102**. In one embodiment, non-volatile memory **104** can be removable.

System **100** also includes one or more signal generating and receiving devices, e.g., signal input/output device(s) **105** coupled to bus **101** for enabling computer **100** to interface with other electronic devices. Communication interface **105** can include wired and/or wireless communication functionality. For example, in one embodiment, communication interface **105** is a serial communication port, but can alternatively be one of a number of well known communication standards and protocols, e.g., a parallel port, an Ethernet adapter, a FireWire (IEEE 1394) interface, a Universal Serial Bus (USB), a small computer system interface (SCSI), an infrared (IR) communication port, a Bluetooth wireless communication adapter, a broadband connection, a satellite link, an Internet feed, a cable modem, and the like. In another embodiment, a digital subscriber line (DSL) can be implemented as signal input/output device **105**. In such an instance, communication interface **105** may include a DSL modem. In embodiments of the present invention, these components are disposed on a circuit board **110** which is contained within a cover assembly.

System **100** can also include an optional display device **106** coupled to bus **101** for displaying video, graphics, and/or alphanumeric characters. It is noted that display device **106** can be a CRT (cathode ray tube), a thin CRT (TCRT), a liquid crystal display (LCD), a plasma display, a field emission display (FED), video eyewear, a projection device (e.g., an LCD, a digital light projector (DLP), a movie theater projection system, and the like.), or any other display device suitable for displaying video, graphics, and alphanumeric characters recognizable to a user.

Computer system **100** of FIG. **1** further includes an optional alphanumeric input device **107** coupled to bus **101** for communicating information and command selections to processor(s) **102**, in one embodiment. Alphanumeric input device **107** is coupled to bus **101** and includes alphanumeric and function keys. Computer **100** can also include an optional cursor control device **108** coupled to bus **101** for communicating user input information and command selections to processor(s) **102**. Cursor control device **108** can be implemented using a number of well known devices such as a mouse, a trackball, a track pad, a joy stick, a optical tracking device, a touch screen, etc. It is noted that a cursor can be directed and/or activated via input from alphanumeric input device **107** using special keys and key sequence commands. It is further noted that directing and/or activating the cursor can be accomplished by alternative means, e.g., voice activated commands, provided computer system **100** is configured with such functionality.

Computer **100** of FIG. **1** can also include one or more computer usable data storage device(s) **109** coupled to bus **101** for storing instructions and information, in one embodiment of the present invention. In one embodiment, data storage device **109** can be a magnetic storage device, e.g., a hard disk drive, a floppy disk drive, a zip drive, or other magnetic storage device. In another embodiment, data storage device **109** can be an optical storage device, e.g., a CD (compact disc), a DVD (digital versatile disc), or other alternative optical storage device. Alternatively, any combination of magnetic, optical, and alternative storage devices can be implemented, e.g., a RAID (random array of independent disks or random array of inexpensive discs) configuration. It is noted that data storage device **109** can be located internal and/or external of system **100** and communicatively coupled with system **100** utilizing wired and/or wireless communication technology, thereby providing expanded storage and functionality to system **100**. It is further noted that nearly any portable electronic device (not shown) can also be communicatively coupled with system **100** via utilization of wired and/or wireless technology, thereby expanding the functionality of system **100**.

Computer **100** of FIG. **1** also includes an analog sound rendering device **111** (e.g., a sound card) that is communicatively coupled with data storage device **109** via signal path **112**. In an embodiment of the present invention, data storage device **109** is a CD/DVD device drive. Typically, CD/DVD device drives have a connector (not shown) that allows coupling a device drive directly with an audio card (e.g., analog sound rendering device **111**) using a cable (e.g., signal path **112**). When the device drive is playing an audio CD, the device drive emits the audio data out of the connector via signal path **112** to the sound card. In an embodiment of the present invention, the data is sent as an analog signal directly to device **111** via signal path **112**. As a result, the data bypasses data bus **101** and cannot be accessed by processor **102**. It is appreciated that analog sound rendering device **111** may be a sound rendering module that is disposed integrally on circuit board **110** in embodiments of the present invention.

FIG. **2** is a block diagram of an exemplary network **200** in which embodiments of the present invention may be implemented. In one embodiment, network **200** enables one or more authorized client computer systems (e.g., **210**, **220**, and **230**), each of which are coupled to Internet **201**, to receive media content from a media content server, e.g., **251**, via the Internet **201** while preventing unauthorized client computer systems from accessing media stored in a database of content server **251**.

Network **200** includes a web server **250** and a content server **251** which are communicatively coupled to Internet **201**. Further, web server **250** and content server **251** can be communicatively coupled without utilizing Internet **201**, as shown. Web server **250**, content server **251**, and client computers **210**, **220**, and **230** can communicate with each other. It is noted that computers and servers of network **200** are well suited to be communicatively coupled in various implementations. For example, web server **250**, content server **251**, and client computer systems **210**, **220**, and **230** of network **200** can be communicatively coupled via wired communication technology, (e.g., twisted pair cabling, fiber optics, coaxial cable, etc.), or wireless communication technology, or a combination of wired and wireless communication technology.

Still referring to FIG. **2**, it is noted that web server **250**, content server **251**, and client computer systems **210**, **220** and **230** can, in one embodiment, be each implemented in a manner similar to computer system **100** of FIG. **1**. However, the server and computer systems in network **200** are not limited to such implementation. Additionally, web server **250** and content server **251** can perform various functionalities within network **200**. It is also noted that, in one embodiment, web server **250** and content server **251** can both be disposed on a single or a plurality of physical computer systems.

Further, it is noted that network **200** can operate with and deliver any type of media content, (e.g., audio, video, multimedia, graphics, information, data, software programs, etc.) in any format. In one embodiment, content server **251** can provide audio and video files to client computers **210-230** via Internet **201**.

FIG. **3** is a block diagram of an exemplary copyright compliance mechanism (CCM) **300**, for controlling distribution of, access to, and/or copyright compliance of media files, in accordance with an embodiment of the present invention. In one embodiment, CCM **300** contains one or more software components and instructions for enabling compliance with DMCA (digital millennium copyright act) restrictions and/or RIAA (recording industry association of America) licensing agreements regarding media files. Additionally, CCM **300**'s software components and instructions further enable compliance with international recording restrictions such as those defined by the IFPI (international federation of phonographic industry), the ISRC (international standard recording industry), other foreign or international recording associations, and/or foreign or international licensing restrictions. In one embodiment, CCM **300** may be integrated into existing and/or newly developed media player and recorder applications. In another embodiment, CCM **300** may be implemented as a stand alone mechanism but in conjunction with existing media player/recorder applications, such that CCM **300** is communicatively coupled to existing media player/recorder applications. Alternatively, CCM **300** can be installed as a stand alone mechanism within a client computer system **210**. Additionally, CCM **300** can be installed as a stand alone mechanism and/or as part of a bundled application from a media storage device, e.g., a CD, a DVD, an SD (secure digital card), and/or as part of an installation package. In another embodiment, CCM **300** can be installed in conjunction with a presentation of desired media content, e.g., listening to an audio file on a music CD, reading a document, viewing a video, etc. It is noted that, in one embodiment, CCM **300** may be installed on client system **210** in a clandestine manner, relative to a user.

There are currently two types of copyright licenses recognized by the digital millennium copyright act (DMCA) for the protection of broadcasted copyrighted material. One of the broadcast copyright licenses is a compulsory license, also referred to as a statutory license. A statutory license is defined as a non-interactive license, meaning the user cannot select the song. Further, a caveat of this type of broadcast license is that a user must not be able to select a particular music file for the purpose of recording it to the user's computer system or other storage device. Another caveat of a statutory license is that a media file is not available more than once for a given period of time. In one example, the period of time can be three hours.

The other type of broadcast license recognized by the DMCA is an interactive licensing agreement. An interactive licensing agreement is commonly with the copyright holder, (e.g., a record company, the artist, etc.), wherein the copyright holder grants permission for a server, (e.g., web server **250** and/or content server **251**) to broadcast copyrighted material. Under an interactive licensing agreement, there are a variety of ways that copyrighted material, (e.g., music files) can be broadcast. For example, one manner in which music files can be broadcast is to allow the user to select and listen to a particular sound recording, but without the user enabled to make a sound recording. This is commonly referred to as an interactive with "no save" license, meaning that the end user is unable to save or store the media content file in a relatively permanent manner. Additionally, another manner in which music files can be broadcast is to allow a user to not only select and listen to a particular music file, but additionally allow the user to save that particularly music file to disc and/or burn the music file to a CD, MP3 player, or other portable electronic device. This is commonly referred to as an interactive with "save" license, meaning that the end user is enabled to save, store, or burn to CD, the media content file.

It is noted that the DMCA allows for the "perfect" reproduction of the sound recording. A perfect copy of a sound recording is a one-to-one mapping of the original sound recording into a digitized form, such that the perfect copy is virtually indistinguishable and/or has no audible differences from the original recording.

In one embodiment, CCM (copyright compliance mechanism) **300** can be stored in web server **250** and/or content server **251** of network **200** and is configured to be installed into each client computer system, e.g., **210**, **220** and **230**, enabled to access the media files stored within content server **251** and/or web server **250**. Alternatively, copyright compliance mechanism **300** can be externally disposed and communicatively coupled with a client computer system **200** via, e.g., a portable media device (not shown). In yet another embodiment, CCM **300** can be configured to be operable from a media storage device (e.g., **108**) upon which media files may be disposed.

Copyright compliance mechanism **300** is configured to be operable while having portions of components, entire components, combinations of components, disposed within one or more memory units and/or data storage devices of a computer system, e.g., **210**, **220**, and/or **230**.

Additionally, CCM **300** can be readily updated, (e.g., via Internet **201**), to reflect changes or developments in the DMCA, copyright restrictions and/or licensing agreements pertaining to any media file, changes in current media player applications and/or the development of new media player applications, or to counteract subversive and/or hacker-like attempts to unlawfully obtain one or more media files. It is noted that updating CCM **300** can include, but is not limited to, updating portions of components, entire components and/or combinations of components of CCM **300**.

Referring to FIG. **3**, CCM **300** can include instructions **301** for enabling client computer system **210** to interact with web server **250** and content server **251** of network **200**. Instruc-

tions **301** enable client computer system **210** to interact with servers, (e.g., **250** and **251**) in a network, (e.g., **200**).

The copyright compliance mechanism **300** also includes, in one embodiment, a user ID generator **302**, for generating a user ID or user key, and one or more cookie(s) which contain(s) information specific to the user and the user's computer system, e.g., **210**. In one embodiment, the user ID and the cookie(s) are installed in computer system **210** prior to installation of the remaining components of the CCM **300**. It is noted that the presence of a valid cookie(s) and a valid user ID/user key are verified by web server **250** before the remaining components of a CCM **300** can be installed, within one embodiment of the present invention. Additionally, the user ID/user key can contain, but is not limited to, the user's name, the user's address, the user's credit card number, an online payment account number, a verified email address, and an identity (username) and password selected by the user.

Furthermore, the cookie can contain, but is not limited to, information specific to the user, information regarding the user's computer system **210**, (e.g., types of media applications operational therewithin), a unique identifier associated with computer system **210**, e.g., a MAC address, an IP address, and/or the serial number of the central processing unit (CPU) operable on computer system **210** and other information specific to the computer system and its user.

Additionally, in another embodiment, user biometrics may be combined with computer system **210** data and user data and incorporated into the generation of a user ID. Alternatively, biometric data may be used in a stand alone implementation in the generation of the user ID. Types of biometric data that may be utilized to provide a user ID and/or authorization may include, but is not limited to, fingerprint data, retinal scan data, handprint data, facial recognition data, and the like.

It is noted that the information regarding the client computer system, e.g., **210**, the user of system **210**, and an access key described herein can be collectively referred to as authorization data.

Advantageously, with information regarding the user and the user's computer system, e.g., **210**, web server **250** can determine when a user of one computer system, e.g., **210**, has given their username and password to another user using another computer system, e.g., **220**. Because the username, password, and the user's computer system **210** are closely associated, web server **250** can prevent unauthorized access to copyrighted media content, in one embodiment. It is noted that if web server **250** detects unauthorized sharing of usernames and passwords, it can block the user of computer system **210**, as well as other users who unlawfully obtained the username and password, from future access to copyrighted media content available through web server **250**. Web server **250** can invoke blocking for any specified period of time, e.g., for a matter of minutes, hours, months, years, or longer or permanently.

Still referring to FIG. **3**, copyright compliance mechanism **300** further includes a coder/decoder (codec) **303** that, in one embodiment, is adapted to perform, but is not limited to, encoding/decoding of media files, compressing/decompressing of media files, and detecting that delivered media files are encrypted as prescribed by CCM **300**. In the present embodiment, coder/decoder **303** can also extract key fields from a header attached to each media content file for, in part, verification that the file originated from a content server, e.g., **251**. It is noted that CCM can include one or more codecs similar to codec **303**.

In the present embodiment, coder/decoder **303** can also perform a periodic and repeated check of the media file, while the media file is passed to the media player application, (e.g., in a frame by frame basis or in a buffer by buffer basis), to ensure that CCM **300** rules are being enforced at any particular moment during media playback. It is noted that differing coder/decoders **303** can be utilized in conjunction with various types of copyrighted media content including, but not limited to, audio files, video files, graphical files, alphanumeric files and the like, such that any type of media content file can be protected in accordance with embodiments of the present invention.

Within FIG. **3**, copyright compliance mechanism **300** also includes one or more agent programs **304** which are configured to engage in dialogs and negotiate and coordinate transfer of information between a computer system, (e.g., **210**, **220**, or **230**), a server, (e.g., web server **250** and/or content server **251**), and/or media player applications, with or without recording functionality, that are operable within a client computer system, in one embodiment. In the present embodiment, agent program **304** can also be configured to maintain system state, verify that other components are being utilized simultaneously, to be autonomously functional without knowledge of the client, and can also present messages, (e.g., error messages, media information, advertising, etc.), via a display window or electronic mail. This enables detection of proper skin implementation and detection of those applications that are running. It is noted that agent programs are well known in the art and can be implemented in a variety of ways in accordance with the present embodiment.

Copyright compliance mechanism **300** also includes one or more system hooks **305**, in one embodiment of the present invention. A system hook **305** is, in one embodiment, a library that is installed in a computer system, e.g., **210**, that intercepts system wide events. For example, a system hook **305**, in conjunction with skins **306**, can govern certain properties and/or functionalities of media player applications operating within the client computer system, e.g., **210**, including, but not limited to, mouse click shortcuts, keyboard shortcuts, standard system accelerators, progress bars, save functions, pause functions, rewind functions, skip track functions, forward track preview, copying to CD, copying to a portable electronic device, and the like.

It is noted that the term govern or governing, for purposes of the present invention, can refer to a disabling, deactivating, enabling, activating, etc., of a property or function. Governing can also refer to an exclusion of that function or property, such that a function or property may be operable but unable to perform in the manner originally intended. For example, during the playing of a media file, the progress bar may be selected and moved from one location on the progress line to another without having an effect on the play of the media file.

Within FIG. **3** it is further noted that codec **303** compares the information for the media player application operating on client computer system, e.g., **210**, with a list of "signatures" associated with known media recording applications. In one embodiment, the signature can be, but is not limited to being, a unique identifier of a media player application and which can consist of the window class of the application along with a product name string which is part of the window title for the application. Advantageously, when new media player applications are developed, their signatures can be readily added to the signature list via an update of CCM **300** described herein.

The following C++ source code is an exemplary implementation of the portion of a codec **303** for performing media player application detection, in accordance with an embodiment of the present invention. In another embodiment, the following source code can be modified to detect kernel streaming mechanisms operable within a client system, (e.g., **210**).

```
int
IsRecorderPresent(TCHAR *       szAppClass,
                  TCHAR *       szProdName)
{
        TCHAR           szWndText[_MAX_PATH]; /* buffer to receive
                        title string for window */
        HWND            hWnd;           /* handle to target window for
                                           operation */
        int       nRetVal;              /* return value for operation */
        /* initialize variables */
        nRetVal = 0;
        if (   _tcscmp(szAppClass, _T("#32770"))
           == 0)
        {
                /* attempt to locate dialog box with specified window
                 title */
                if (    FindWindow((TCHAR *) 32770,
                szProdName)
                   != (HWND) 0)
                {
                        /* indicate application found */
                        nRetVal = 1;
                }
        }
        else
        {
                /* attempt to locate window with specified class */
                if (   (hWnd = Find Window(szAppClass, (LPCTSTR) 0))
                   != (HWND) 0)
                {
                        /* attempt to retrive title string for window */
                        if (    GetWindowText(hWnd,
                                        szWndText,
                                        _MAX_ PATH)
                           != 0)
                        {
                                /* attempt to locate product name within
                                 title string */
                                if (     _tcsstr(szWndText,
                                szProdName)
                                   != (TCHAR *) 0)
                                {
                                        /* indicate application found */
                                        nRetVal = 1;
                                }
                        }
                }
        }
        /* return to caller */
        return nRetVal;
}
```

Within FIG. **3** it is further noted that codec **303** can also selectively suppress waveform input/output operations to prevent recording of copyrighted media on a client computer system (e.g., **210**). For example, codec **303**, subsequent to detection of bundled media player applications operational in a client computer system, (e.g., **210**), can stop or disrupt the playing of a media content file. This can be accomplished, in one embodiment, by redirecting and/or diverting certain data pathways that are commonly used for recording, such that the utilized data pathway is governed by the copyright compliance mechanism **300**. In one embodiment, this can be performed within a driver shim, (e.g., wave driver shim **309** of FIGS. **5**A, **5**B, **5**C, and **5**D.

A driver shim can be utilized for nearly any software output device, such as a standard Windows™ waveform output device, (e.g., Windows™ Media Player), or hardware output device, (e.g., speakers or headphones). Client computer system **210** is configured such that the driver shim (e.g., **309**) appears as the default waveform media device to client level application programs. Thus, requests for processing of waveform media input and/or output will pass through the driver shim prior to being forwarded to the actual waveform audio driver, (e.g., media device driver **505** of FIGS. **5**A-**5**D). Such waveform input/output suppression can be triggered by other components, (e.g., agent **304**), of CCM **300**, to be active when a recording operation is initiated by a client computer system, e.g., **210**, during the play back of media files which are subject to the DMCA.

It is noted that alternative driver shims can be implemented for nearly any waveform output device including, but not limited to, a Windows™ Media Player. It is further noted that the driver shim can be implemented for nearly any media in nearly any format including, but not limited to, audio media files, audio input and output devices, video, graphic and/or alphanumeric media files and video input and output devices.

The following C++ source code is an exemplary implementation of a portion of a codec **303** and/or a custom media device driver **307** for diverting and/or redirecting certain data pathways that are commonly used for recording of media content, in accordance with an embodiment of the present invention.

```
DWORD
_stdcall
widMessage(UINT             uDevId,
        UINT                uMsg,
        DWORD       dwUser,
        DWORD       dwParam1,
        DWORD       dwParam2)
{
        BOOL            bSkip;          /* flag indicating operation to be
                                           skipped */
        HWND                hWndMon;    /* handle to main window
                                           for monitor */
        DWORD               dwRetVal;   /* return value for
                                           operation */
        /* initialize variables */
        bSkip    = FALSE;
        dwRetVal = (DWORD) MMSYSERR_NOTSUPPORTED;
        if (uMsg == WIDM_START)
        {
                /* attempt to locate window for monitor application */
                if (     (hWndMon = FindMonitorWindow( ))
                   != (HWND) 0)
                {
                        /* obtain setting for driver */
                        bDrvEnabled =   (  SendMessage(hWndMon,
                                                uiRegMsg,
                                                0,
                                                0)
                                        == 0)
                                ? FALSE : TRUE;
                }
                if (bDrvEnabled == TRUE)
                {
                        /* indicate error in operation */
                        dwRetVal = MMSYSERR_NOMEM;
                        /* indicate operation to be skipped */
                        bSkip = TRUE;
                }
        }
        if (bSkip == FALSE)
        {
                /* invoke entry point for original driver */
                dwRetVal = CallWidMessage(uDevId, uMsg, dwUser,
                dwParam1, dwParam2);
        }
        /* return to caller */
        return dwRetVal;
}
```

It is noted that when properly configured, system hook **305** can govern nearly any function or property within nearly any media player application that may be operational within a client computer system, (e.g., **210**). In one embodiment, system hook **305** is a DLL (dynamic link library) file. It is further

noted that system hooks are well known in the art, and are a standard facility in a Microsoft Windows™ operating environment, and accordingly can be implemented in a variety of ways. However, it is also noted that system hook **305** can be readily adapted for implementation in alternative operating systems, e.g., Apple™ operating systems, Sun Solaris™ operating systems, Linux operating systems, and nearly any other operating system.

In FIG. **3**, copyright compliance mechanism **300** also includes one or more skins **306**, which can be designed to be installed in a client computer system, (e.g., **210**, **220**, and **230**). In one embodiment, skins **306** are utilized to assist in client side compliance with the DMCA (digital millennium copyright act) regarding copyrighted media content. Skins **306** are customizable interfaces that, in one embodiment, are displayed on a display device (e.g., **106**) of computer system **210** and provide functionalities for user interaction of delivered media content. Additionally, skins **306** can also provide a display of information relative to the media content file including, but not limited to, song title, artist name, album title, artist biography, and other features such as purchase inquiries, advertising, and the like.

Furthermore, when system hook **305** is unable to govern a function of the media player application operable on a client computer system, e.g., **210**, such that client computer system could be in non-compliance with DMCA and/or RIAA restrictions, a skin **306** can be implemented to provide compliance.

Differing skins **306** can be implemented depending upon the restrictions applicable, (e.g., DMCA and/or RIAA), to each media content file. For example, in one embodiment, a skin **306***a* may be configured for utilization with a media content file protected under a non-interactive agreement (DMCA), such that skin **306***a* may not include a pause function, a stop function, a selector function, and/or a save function, etc. Another skin, e.g., skin **306***b* may, in one embodiment, be configured to be utilized with a media content file protected under an interactive with "no save" agreement (DMCA), such that skin **306***b* may include a pause function, a stop function, a selector function, and for those media files having an interactive with "save" agreement, a save or a burn to CD function.

Still referring to FIG. **3**, it is further noted that in the present embodiment, each skin **306** can have a unique name and signature. In one embodiment, skin **306** can be implemented, in part, through the utilization of an MD (message digest) **5** hash table or similar algorithm. An MD5 hash table can, in one implementation, be a check-sum algorithm. It is well known in the art that a skin, e.g., skin **306**, can be renamed and/or modified to incorporate additional features and/or functionalities in an unauthorized manner. Since modification of the skin would change the check sum and/or MD5 hash, without knowledge of the MD5 hash table, changing the name or modification of the skin may simply serve to disable the skin, in accordance with one embodiment of the present invention. Since copyright compliance mechanism (CCM) **300** verifies skin **306**, MD5 hash tables advantageously provide a deterrent against modifications made to the skin **306**.

In one embodiment, CCM **300** also includes one or more custom media device driver(s) **307** for providing an even greater measure of control over the media stream while increasing compliance reliability. A client computer system, (e.g., **210**), can be configured to utilize a custom media device application, (e.g., custom media device **310** of FIGS. **5**B, **5**C, and **5**D), to control unauthorized recording of media content files. A custom media device application can be, but is not limited to, a custom media audio device application for media files having sound content, a custom video device application for media files having graphical and/or alphanumeric content, etc. In one embodiment, custom media device **310** of FIG. **5**B is an emulation of the custom media device driver **307**. With reference to audio media, the emulation is performed in a waveform audio driver associated with custom media device **310**. Driver **307** is configured to receive a media file being outputted by system **210** prior to the media file being sent to a media output device, (e.g., media output device **570**), and/or a media output application, (e.g., recording application **502**). Examples of a media output device includes, but is not limited to, a video card for video files, a sound card for audio files, etc. Examples of a recording application can include, but is not limited to, CD burner applications for writing to another CDs, ripper applications which capture the media file and change the format of the media file, e.g., from a CD audio file to an .mpeg audio file, and/or a .wav file, and/or an ogg vorbis file, and various other media formats. In one embodiment, client computer system **210** is configured with a custom media device driver **307** emulating custom media device **310**, and which is system **210**'s default device driver for media file output. In one embodiment, an existing GUI (graphical user interface) can be utilized or a GUI can be provided, e.g., by utilization of skin **306** or a custom web based player application or as part of a CCM **300** installation bundle, for forcing or requiring system **210** to have driver **307** as the default driver.

Therefore, when a media content file is received by system **210** from server **251**, the media content file is playable, provided the media content file passes through the custom media device application (e.g., **310** of FIG. **5**B), emulated from custom media device driver **307**, prior to being outputted. However, if an alternative media player application is selected, delivered media files from server **251** will not play on system **210**.

Thus, secured media player applications would issue a media request to the driver, (e.g., **307**), for the custom media device **310** which then performs necessary media input suppression, (e.g., waveform suppression for audio files), prior to forwarding the request to the default Windows™ media driver, (e.g., waveform audio driver for audio files).

Within FIG. **3** it is noted that requests for non-restricted media files can pass directly through custom media device driver **307** to a Windows™ waveform audio driver operable on system **210**, thus reducing instances of incompatibilities with existing media player applications that utilize waveform media, (e.g., audio, video, etc.). Additionally, media player applications that do not support secured media would be unaffected. It is further noted that for either secured media or non-restricted media, (e.g., audio media files), waveform input suppression can be triggered by other components of CCM **300**, (e.g., agents **304**, system hooks **305**, and skins **306**), or a combination thereof, to be active when a recording operation is initiated simultaneously with playback of secured media files, (e.g., audio files). Custom device drivers are well known and can be coded and implemented in a variety of ways including, but not limited to, those found at developers network web sites, (e.g., a Microsoft™ or alternative OS (operating system) developer web sites).

Advantageously, by virtue of system **210** being configured with a custom media device as the default device driver (e.g., **310** of FIGS. **5**B, **5**C, and **5**D), that is an emulation of a custom media device driver **307**, those media player applications that require their particular device driver to be the default driver, e.g., Total Recorder, etc., are rendered non-functional for secured media. Further advantageous is that an emulated custom media device provides no native support for those media player applications used as a recording mecha-

nism, e.g., DirectSound capture, (direct sound **504** of FIGS. **5**A, **5**B, **5**C, and **5**D) etc., that are able to bypass user-mode drivers for most media devices. Additionally, by virtue of the media content being sent through device driver **307**, thus effectively disabling unauthorized saving/recording of media files, in one embodiment, media files that are delivered in a secured delivery system do not have to be encrypted, although, in another embodiment, they still may be encrypted. By virtue of non-encrypted media files utilizing less storage space and network resources than encrypted media files, networks having limited resources can utilize the functionalities of driver **307** of CCM **300** to provide compliance with copyright restrictions and/or licensing agreements applicable with a media content file without having the processing overhead of encrypted media files.

FIG. **4** is an illustration of an exemplary system **400** for implementing a copyright compliance mechanism in accordance with an embodiment of the present invention. Specifically, system **400** illustrates web server **250**, content server **251**, or a combination of web server **250** and content server **251** installing a copyright compliance mechanism (e.g., **300**) in a client's computer system (e.g., **210**) for controlling media file distribution and controlling user access and interaction of copyrighted media files, in one embodiment of the present invention.

Client computer system **210** can communicatively couple with a network (e.g., **200**) to request a media file, a list of available media files, or a play list of audio files, e.g., MP3 files, etc. In response, web server **250** determines if the request originates from a registered user authorized to receive media files associated with the request. If the user is not registered with the network, web server **250** can initiate a registration process with the requesting client **210**. Client registration can be accomplished in a variety of ways. For example, web server **250** may deliver to a client **210** a registration form having various text entry fields into which the user can enter required information. A variety of information can be requested from the user by web server **250** including, but not limited to, user's name, address, phone number, credit card number, online payment account number, biometric identification (e.g., fingerprint, retinal scan, etc.), verifiable email address, and the like. In addition, registration can, in one embodiment, include the user selecting a username and password.

Still referring to FIG. **4**, web server **250** can, in one embodiment, detect information related to the client's computer system **210** and store that information in a user/media database **450**. For example, web server **250** can detect a unique identifier of client computer system **210**. In one embodiment, the unique identifier can be the MAC address of a NIC (network interface card) of client computer system **210** or the MAC address of the network interface adapter integrated on the motherboard of system **210**. It is understood that a NIC enables a client computer system **210** to access web server **250** via a network such as Internet **201**. It is well known that each NIC typically has a unique identifying number MAC address. Further, web server **250** can, in one embodiment, detect and store (also in database **450**) information regarding the types(s) of media player application(s), e.g., Windows Media Player™, Real Player™, iTunes player™ (Apple), Live **365**™ player, and those media player applications having recording functionality, (e.g., Total Recorder, Cool Edit 2000, Sound Forge, Sound Recorder, Super MP3 Recorder, and the like), that are present and operable in client computer system **210**. In one embodiment, the client information is verified for accuracy and is then stored in a user database (e.g., **450**) within web server **250**.

Subsequent to registration completion, creation of the user ID and password, and obtaining information regarding client computer system **210**, all or part of this information can be installed in client computer system **210**. In one embodiment, client computer system **210** information can be in the form of a cookie. Web server **250** then verifies that the user and client computer system **210** data is properly installed therein and that their integrity has not been compromised. Subsequently, web server **250** installs a copyright compliance mechanism (e.g., **300**) into the client's computer system, e.g., **210**, in one embodiment of the present invention. It is noted that web server **250** may not initiate installation of CCM **300** until the user ID, password, and client computer system **210** information is verified. A variety of common techniques can be employed to install an entire CCM **300**, portions of its components, entire components, and/or combinations or a function of its components. For example, copyright compliance mechanism **300** can be installed in a hidden directory within client computer system **210**, thereby preventing unauthorized access to it. In one embodiment, it is noted that unless CCM **300** is installed in client computer system **210**, its user will not be able to request, access, or have delivered thereto, media files stored by web server **250** and/or content server **251**.

Referring still to FIG. **4**, upon completion of client registration and installation of CCM **300**, client computer system **210** can then request a media play list or a plurality of play lists, etc. In response, web server **250** determines whether the user of client computer system **210** is authorized to receive the media play list associated with the request. In one embodiment, web server **250** can request the user's username and password. Alternatively, web server **250** can utilize user database **450** to verify that computer **210** is authorized to receive a media play list. If client computer **210** is not authorized, web server **250** can initiate client registration, as described herein. Additionally, web server **250** can disconnect computer **210** or redirect it to an alternative web site. Regardless, if the user and client computer system **210** are not authorized, web server **250** will not provide the requested play list to client computer system **210**.

However, if client computer system **210** is authorized, web server **210** can check copyright compliance mechanism **300** within data base **450** to determine if it, or any of the components therein, have been updated since the last time client computer system **210** logged in to web server **250**. If a component of CCM **300** has been updated, web server **250** can install the updated component and/or a more current version of CCM **300** into client computer system **210**, e.g., via Internet **201**. If CCM **300** has not been updated, web server **250** can then deliver the requested media play list to system **210** via Internet **201** along with an appended user key or user identification (ID). It is noted that user database **450** can also include data for one or more media play lists that can be utilized to provide a media play list to client computer system **210**. Subsequently, the user of client computer system **210** can utilize the received media play list in combination with the media player application operating on system **210** to transmit a delivery request for one or more desired pieces of media content from web server **250**. It is noted that the delivery request contains the user key for validation purposes.

Still referring to FIG. **4**, upon receiving the media content delivery request, web server **250** can then check the validity of the requesting media application and the attached user key. In one embodiment, web server **250** can utilize user database **450** to check their validity. If either or both are invalid, web server **250**, in one embodiment, can redirect unauthorized client computer system **210** to an alternative destination to prevent abuse of the system. However, if both the requesting

media application and the user key are valid, CCM **300** verifies that skins **306** are installed in client computer system **210**. Additionally, CCM **300** further verifies that system hook(s) **305** have been run or are running to govern certain functions of those media player applications operable within client computer system **210** that are known to provide non-compliance with one or more restricted use standards such as the DMCA and/or the RIAA. Additionally, CCM **300** further diverts and/or redirects certain pathways that are commonly used for recording, e.g., driver **307** of FIG. **5**A, device **310** of FIG. **5**B, device **570** of FIG. **5**C, and driver **505** of FIG. **5**D. Once CCM **300** has performed the above described functions, web server **250** then, in one embodiment, issues to the client computer **210** a redirect command to the current address location of the desired media file content along with an optional time sensitive access key, e.g., for that hour, day, or other defined timeframe.

In response to the client computer system **210** receiving the redirect command from web server **250**, the media player application operating on client computer system **210** automatically transmits a new request and the time sensitive access key to content server **251** for delivery of one or more desired pieces of media content. The validity of the time sensitive access key is checked by content server **251**. If invalid, unauthorized client computer **210** is redirected by content server **250** to protect against abuse of the system and unauthorized access to content server **251**. If the time sensitive access key is valid, content server **251** retrieves the desired media content from content database **451** and delivers it to client computer system **210**. It is noted that, in one embodiment, the delivered media content can be stored in hidden directories and/or custom file systems that may be hidden within client computer system **210** thereby preventing future unauthorized distribution. In one embodiment, an HTTP (hypertext transfer protocol) file delivery system is used to deliver the requested media files, meaning that the media files are delivered in their entirety to client computer system **210**, as compared to streaming media which delivers small portions of the media file.

Still referring to FIG. **4**, it is noted that each media file has had, in one embodiment, a header attached therewith prior to delivery of the media file. In one embodiment, the header can contain information relating to the media file, e.g., title or media ID, media data such as size, type of data, and the like. The header can also contain a sequence or key that is recognizable to copyright compliance mechanism **300** that identifies the media file as originating from a content server **251**. In one embodiment, the header sequence/key can also contain instructions for invoking the licensing agreements and/or copyright restrictions that are applicable to that particular media file.

Additionally, if licensing agreements and/or copyright restrictions are changed, developed, or created, or if new media player applications, with or without recording functionality, are developed, CCM **300** has appropriate modifications made to portions of components, entire components, combinations of components, and/or the entire CCM **300** to enable continued compliance with licensing agreements and/or copyright restrictions. Furthermore, subsequent to modification of copyright compliance mechanism **300**, modified portions of, or the entire updated CCM **300** can be installed in client computer system **210** in a variety of ways. For example, the updated CCM **300** can be installed during client interaction with web server **250**, during user log-in, and/or while client computer system **210** is receiving the keyed play list.

Referring still to FIG. **4**, it is further noted that, in one embodiment, the media files and attached headers can be encrypted prior to being stored within content server **251**. In one embodiment, the media files can be encrypted utilizing randomly generated keys. Alternatively, variable length keys can be utilized for encryption. It is noted that the key to decrypt the encrypted media files can be stored in database **450**, content database **451** or in some combination of databases **450** and **451**. It is further noted that the messages being passed back and forth between client computer system **210** and web server **250** can also be encrypted, thereby protecting the media files and the data being exchanged from unauthorized use or access. There are a variety of encryption mechanisms and programs that can be implemented to encrypt this data including, but not limited to, exclusive OR, shifting with adds, public domain encryption programs such as Blowfish, and non-public domain encryption mechanisms. It is also noted that each media file can be uniquely encrypted, such that if the encryption code is cracked for one media file, it is not applicable to other media files. Alternatively, groups of media files can be similarly encrypted. Furthermore, in another embodiment, the media files may not be encrypted when being delivered to a webcaster known to utilize a proprietary media player application, e.g., custom media device driver **307**.

Subsequent to media file decryption, the media file may be passed through CCM **300**, (e.g., coder/decoder **303**), to a media player application operating on client computer system **210**, e.g. playback application **501** of FIGS. **5**A, **5**B, **5**C, **5**D, and **6**), which can then access and utilize the delivered high fidelity media content, enabling its user(s) to experience the media content, e.g., listen to it, watch it, view it, or the like. In one embodiment of the present invention, a specialized or custom media player may or may not be required to experience the media content, (e.g., skin **306** of FIG. **3**). A skin **306** may be necessary when CCM **300** cannot modify an industry standard media player application to comply with copyright restrictions and/or licensing agreements in accordance with the DMCA. Alternatively, an industry standard media player can be utilized by client computer system **210** to experience the media content. Typically, many media player applications are available and can include, but are not limited to, Windows™ Media Player™ for PCs (personal computers), iTunes™ Player or QuickTime™ for Apple computers, and XMMS player for computers utilizing a Linux operating system. Regardless of the media player application utilized, while the media file is passed to the media player application, e.g., in a frame by frame basis or in a buffer, coder/decoder **303** will repeatedly ensure that CCM **300** rules are being enforced at any particular moment during media playback, shown as step **750** of FIG. **7**C.

As the media file content is delivered to the media player application, periodically, (e.g., after a specified number of frames, after a defined period of time, or any desired time or data period), coder/decoder **303** repeatedly determines whether or not all the rules, as defined by CCM **300**, are enforced. If the rules are not enforced, (e.g., a user opening up a recording application such as Total Recorder or an alternative application, the presentation of the media content is, in one embodiment, suspended or halted. In another embodiment, the presentation of the media content can be modified to output the media content in a non audibly, (e.g., silence). In yet another embodiment, the media content may be audible but recording functionality can be disabled, such that the media content cannot be recorded. These presentation stoppages are collectively shown as step **751** of FIG. **7**C.

If the rules, in accordance with CCM **300**, are enforced, the codec/decoder **303** retrieves a subsequent portion of the media content that is stored locally in client computer system

210. The newly retrieved portion of the media file is then presented by the client's media player application. While the newly retrieved portion is presented, CCM **300** then again checks that the rules are enforced, and retrieves an additional portion of the media file or suspends presentation of the media file if the rules are not being enforced. These operations are performed repeatedly throughout the playback of the media file, in a loop environment, until the media file's contents have been presented in their entirety. Advantageously, by constantly monitoring during playing of media files, CCM **300** can detect undesired activities and enforces those rules as defined by CCM **300**.

FIG. **5**A is an exemplary logic/bit path block diagram **500**A showing utilization of a wave shim driver, (e.g., wave shim driver **309** of FIG. **3**), in conjunction with copyright compliance mechanism **300**, for selectively controlling recording of copyrighted media received by a client computer system, (e.g., system **210**), in one embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, installed and operational on client system **210** in the manner described herein.

In one embodiment, a copyright compliance mechanism **300** is shown as being communicatively coupled with a media playback application **501** via coupling **520**. Therefore, CCM **300** is enabled to communicate with playback application **501**. In one embodiment, CCM **300** can be integrated into a media playback application. CCM **300** is also coupled to and controls a selectable switch **311** in wave shim driver **309** (as described in FIG. **3**) via coupling **522**. CCM **300** is further coupled to and controls a selectable switch **511** in direct sound **504** via coupling **521**. Depending upon the copyright restrictions and licensing agreements applicable to an incoming media file, (e.g., **499**), CCM **300** controls whether switches **311** and **511** are open (shown), thus preventing incoming media **499** from reaching a media recording application, or closed (not shown) to allow recording of incoming media **499**.

For example, incoming media **499** may originate from a content server, (e.g., **251**, coupled to system **210**). In another example, incoming media **499** may originate from a personal recording/electronic device, (e.g., a MP3 player/recorder or similar device, coupled to system **210**). Alternatively, incoming media **499** may originate from a magnetic, optical or alternative media storage device inserted into a media device player coupled to system **210**, (e.g., a CD or DVD inserted into a CD or DVD player), a hard disk in a hot swappable hard drive, an SD (secure digital card) inserted into a SD reader, and the like. In yet another example, incoming media **499** may originate from another media player application or media recording application. Incoming media **499** may also originate from, but is not limited to, a satellite radio feed (e.g., XM radio), a personal communication device (e.g., a mobile phone), a cable television radio input, (e.g., DMX (digital music express)), a digital distribution and/or a public presentation source via a network, Internet or other communication connection, pay-per-view and/or pay-per-play system, or a set-top box. It is noted that incoming media **499** can originate from nearly any source that can be coupled to system **210**. However, regardless of the source of incoming media **499**, embodiments of the present invention, described herein, can prevent unauthorized recording of the media **499**.

FIG. **5**A shows a media playback application **501**, (e.g., an audio, video, or other media player application), operable within system **210** and configured to receive incoming media **499**. Playback application **501** can be a playback application provided by an operating system, (e.g., Media Player for Windows™ by Microsoft), a freely distributed playback application downloadable from the Internet, (e.g., RealPlayer or LiquidAudio), a playback application provided by a webcaster, (e.g., PressPlay), or a playback application commercially available.

Media device driver **505** which, in one embodiment, may be a software driver for a sound card coupled to system **210** having a media output device **570**, e.g., speakers or headphones, coupled therewith for media files having audio content. In another implementation, media device driver **505** may be a software driver for a video card coupled with a display device, (e.g., **105**), for displaying media files having alphanumeric and/or graphical content, and so on. With reference to audio files, it is well known that a majority of recording applications assume a computer system, (e.g., **210**), has a sound card disposed therein, providing full-duplex sound functionality to system **210**. This means media output driver **505** can simultaneously cause playback and recording of incoming media files **499**. For example, media device driver **505** can playback media **499** along wave-out line **539** to media output device **570** (e.g., speakers for audible playback) via wave-out line **580** while outputting media **499** on wave-out line **540** to eventually reach recording application **502**.

For purposes of FIGS. **5**A, **5**B, **5**C, and **5**D, the terms wave-in line and wave-out line are referenced from the perspective of media device driver **505**. Additionally, for the most part, wave-in lines are depicted downwardly and wave-out lines are depicted upwardly in FIGS. **5**A, **5**B, **5**C, and **5**D.

Continuing with FIG. **5**A, playback application **501** is coupled with an operating system (O/S) multimedia subsystem **503** and direct sound **504** via wave-in lines **531** and **551** respectively. O/S multimedia subsystem **503** is coupled to a wave shim driver **309** via wave-in line **533** and wave-out line **546**. O/S multimedia subsystem **503** is also coupled to a recording application **502** via wave-out line **548**. Operating system (O/S) multimedia subsystem **503** can be any O/S multimedia subsystem, e.g., a Windows™ multimedia subsystem for system **210** operating under a Microsoft O/S, a QuickTime™ multimedia subsystem for system **210** operating under an Apple O/S, and so on. Playback application **501** is also coupled with direct sound **504** via wave-in line **551**.

Direct sound **504**, in one embodiment, may represent access to a hardware acceleration feature in a standard audio device, enabling lower level access to components within media device driver **505**. In another embodiment, direct sound **504** may represent a path that can be used by a recording application, (e.g., Total Recorder), that can be further configured to bypass the default device driver, (e.g., media device driver **505**), to capture incoming media **499** for recording. For example, direct sound **504** can be enabled to capture incoming media **499** via wave-in line **551** and unlawfully output media **499** to a recording application **502** via wave-out line **568**, as well as media **499** eventually going to media device driver **505**, the standard default driver.

Still referring to FIG. **5**A, wave shim driver **309** is coupled with media device driver **505** via wave-in line **537** and wave-out line **542**. Media device driver **505** is coupled with direct sound **504** via wave-in line **553** which is shown to converge with wave-in line **537** at media device driver **505**. Media device driver **505** is also coupled with direct sound **504** via wave-out line **566**.

Wave-out lines **542** and **566** are shown to diverge from wave-out line **540** at media device driver **505** into separate paths. Wave-out line **542** is coupled to wave shim driver **309** and wave-out line **566** is coupled to direct sound **504**. When selectable switch **311** and **511** are open (shown), incoming media **499** cannot flow to recording application **502**, thus preventing unauthorized recording of it.

For example, incoming media **499** is received at playback application **501**. Playback application **501** activates and communicates to CCM **300** regarding copyright restrictions and/or licensing agreements applicable to incoming media **499**. If recording restrictions apply to media **499**, CCM **300** can, in one embodiment, open switches **311** and **511**, thereby blocking access to recording application **502** to effectively preventing unauthorized recording of media **499**. In one embodiment, CCM **300** can detect if system **210** is configured with direct sound **504** selected as the default driver to capture incoming media **499**, via wave-in line **551**, or a recording application is detected and/or a hardware accelerator is active, such that wave driver shim **309** can be bypassed by direct sound **504**. Upon detection, CCM **300** can control switch **511** such that the output path, wave-out line **568**, to recording application **502** is blocked. It is further noted that CCM **300** can detect media recording applications and devices as described herein, with reference to FIG. **3**.

Alternatively, if media device driver **505** is selected as the default driver, incoming media **499** is output from playback application **501** to O/S multimedia subsystem **503** via wave-in line **531**. From subsystem **503**, media **499** is output to wave shim driver **309** via wave-in line **533**. The wave shim driver **309** was described herein with reference to FIG. **3**. Media **499** is output from wave shim driver **309** to media device driver **505** via wave-in line **537**. Once received by media device driver **505**, media **499** can be output via wave-out line **539** to a media output device **570** coupled therewith via wave-out line **580**. Additionally, media device driver **505** can simultaneously output media **499** on wave-out line **540** back to wave shim driver **309**. Dependent upon recording restrictions applicable to media **499**, CCM **300** can, in one embodiment, close switch **311** (not shown as closed), thereby allowing media **499** to be output from wave shim driver **309** to subsystem **503** (via wave-out line **546**) and then to recording application **502** via wave-out line **548**. Alternatively, CCM **300** can also open switch **311**, thereby preventing media **499** from reaching recording application **502**.

It is particularly noted that by virtue of CCM **300** controlling both switches **311** and **511**, and therefore controlling wave-out line **548** and wave-out line **568** leading into recording application **502**, incoming media files, (e.g., media **499**), can be prevented from being recorded in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media **499**. It is also noted that embodiments of the present invention in no way interfere with or inhibit the playback of incoming media **499**.

FIG. **5**B is an exemplary logic/bit path block diagram **500**B of a client computer system, (e.g., **210**), configured with a copyright compliance mechanism **300** for preventing unauthorized recording of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in the manner described herein with reference to FIGS. **4**, **5**A, **5**C, **5**D, **6**, and **7**.

Diagram **500**B of FIG. **5**B is similar to diagram **500**A of FIG. **5**A, with a few changes. Particularly, diagram **500**B includes a custom media device **310** communicatively interposed between and coupled to O/S multimedia subsystem **503** and wave shim driver **309**. Custom media device **310** is coupled to O/S multimedia subsystem via wave-in line **533** and wave-out line **546**. Custom media device **310** is coupled with wave shim driver **309** via wave-in line **535** and wave-out line **544**. Additionally, custom media device **310** is coupled with direct sound **504** via wave-in line **553** which converges with wave-in line **533** and wave-out line **566** which diverges from wave-out line **546**, in one embodiment.

Diagram **500**B also includes a media hardware output device **570** that is coupled to media device hardware driver **505** via line **580**. Media hardware output device **570** can be, but is not limited to, a sound card for audio playback, a video card for video, graphical, alphanumeric, etc, output, and the like.

In one embodiment, CCM **300** is communicatively coupled with playback application **501** via coupling **520**, waveform driver shim **309** via coupling **522**, and custom media device **310** via coupling **525**. CCM **300** is coupled to and controls a selectable switch **311** in waveform driver shim **309** via coupling **522**. CCM **300** is also coupled to and controls a selectable switch **312** in custom audio device **310** via coupling **525**. Depending upon the copyright restrictions and licensing agreements applicable to an incoming media file, (e.g., media **499**), CCM **300** controls whether switches **311** and **312** are open (shown), thus preventing the incoming media **499** from reaching a recording application, or closed (not shown) so as to allow recording of the incoming media **499**.

Continuing with FIG. **5**B, direct sound **504** is shown coupled with custom media device **310** via wave-in line **553**, instead of being coupled with media device driver **505** (FIG. **5**A). In one embodiment, custom audio device **310** mandates explicit selection through system **210**, meaning that custom audio device **310** needs to be selected as a default driver of system **210**. By virtue of having the selection of custom media device **310** as the default driver of system **210**, the data path necessary for direct sound **504** to capture the media content can be selectively closed.

For example, incoming media **499** originating from nearly any source described herein with reference to FIG. **5**A is received by media playback application **501** of system **210**. Playback application **501** communicates to CCM **300**, via coupling **520**, to determine whether incoming media **499** is protected by any copyright restrictions and/or licensing agreements. Playback application **501** communicates with CCM **300** to control switch **311** and **312** accordingly. For example, if recording of incoming media **499** would violate applicable restrictions and/or agreements, and therefore switch **312** is in an open position (as shown), such that the output path to recording application **502**, (e.g., wave-out line **548** and/or wave-out line **568**), is effectively blocked, thereby preventing unauthorized recording of media **499**.

Alternatively, if media device driver **505** is selected as the default driver, incoming media **499** continues from O/S multimedia subsystem **503**, through custom media device **310**, wave driver shim **309**, and into media device driver **505** where media **499** can be simultaneously output to media output device **570** via line **580**, and output on wave-out line **540** and outputted by media device driver **505** to wave shim driver **309** on wave-out line **542**. However, by virtue of CCM **300** controlling switch **311**, wave-out line **544** which eventually leads to recording application **502** is blocked, thus effectively preventing unauthorized recording of media **499**.

It is particularly noted that by virtue of CCM **300** controlling both switches **311** and **312** and therefore controlling wave-out line **548** and wave-out line **568**, any incoming media files, e.g., incoming media **499**, can be prevented from being recorded in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media **499**.

Still referring to FIG. **5**B, it is further noted that custom media device **310** allows for unfettered playback of incoming

media **499**. Additionally, at any time during playback of media **499**, custom media device **310** can be dynamically activated by CCM **300**.

FIG. **5**C is an exemplary logic/bit path block diagram **500**C of a client computer system, (e.g., **210**), configured with a copyright compliance mechanism **300** for preventing unauthorized output and unauthorized recording of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in the manner described herein with reference to FIGS. **4**, **5**A, **5**B, **5**D, **6**, and **7**.

Diagram **500**C of FIG. **5**C is similar to diagram **500**B of FIG. **5**B, with a few changes. Particularly, media hardware output device **570** that is coupled with a media device driver **505**. In one embodiment, media hardware output device **570** is shown to include a switch **571** controlled by CCM **300** via communication line **523**, similar to switches **311** and **312**, for controlling output of incoming media **499**. Diagram **500**C includes media hardware output device **570** that is coupled with media device driver **505**. In one embodiment media hardware output device **570** can be a S/PDIF (Sony/Phillips Digital Interface) card for providing multiple outputs, (e.g., an analog output **573** and a digital output **575**). An alternative media hardware output device providing similar digital output can also be implemented as device **570** including, but not limited to, a USB (universal serial bus) output device and/or an externally accessible USB port located on system **210**, a FireWire (IEEE1394) output device and/or an externally accessible FireWire port located on system **210**, with wireline or wireless communication functionality.

In one embodiment, CCM **300** is communicatively coupled with playback application **501** via coupling **520**, waveform driver shim **309** via coupling **522**, custom media device **310**, via coupling **525**, and media hardware output device **570** via coupling **523**. CCM **300** is coupled to and controls a selectable switch **311** in waveform driver shim **309** via coupling **522**. CCM **300** is also coupled to and controls a selectable switch **312** in custom audio device **310** via coupling **525**. CCM **300** is further coupled to and controls a selectable switch **571** in media hardware output device **570** via connection **523**. Depending upon the copyright restrictions and licensing agreements applicable to an incoming media file, (e.g., media **499**), CCM **300** controls whether switches **311** and **312** are open (shown), thus preventing the incoming media **499** from reaching a recording application, or closed (not shown) so as to allow recording of the incoming media **499**. Additionally, CCM **300** controls whether switch **571** is open (shown), thus preventing incoming media **499** from being output from digital output **575** of media hardware output device **570**, or closed (not shown) to allow incoming media **499** to be output from media hardware output device **570**.

By controlling media hardware output device **570**, copyright compliance mechanism **300** can prevent unauthorized output of incoming media **499** to, e.g., a digital recording device that may be coupled with digital output **575** of media hardware output device **570**. Accordingly, in one embodiment, CCM **300** is enabled to also detect digital recording devices that may be coupled to a digital output line, e.g., **575**, of a media hardware output device, (e.g., **570**). Examples of a digital recording device that can be coupled to media hardware output device **570** includes, but is not limited to, mini-disc recorders, MP3 recorders, personal digital recorders, digital recording devices coupled with multimedia systems, personal communication devices, set-top boxes, and/or nearly any digital device that can capture an incoming media **499** being output from a media hardware output device **570**, (e.g., a sound card, a video card, etc.).

Within FIG. **5**C, direct sound **504** is shown coupled with custom media device **310** via wave-in line **553**, instead of being coupled with media device driver **505** (FIG. **5**A). In one embodiment, custom audio device **310** mandates explicit selection through system **210**, meaning that custom audio device **310** is needs to be selected as a default driver of system **210**. By virtue of having the selection of custom media device **310** as the default driver of system **210**, the data path necessary for direct sound **504** to capture the media content can be selectively closed.

For example, incoming media **499** originating from nearly any source with reference to FIG. **5**A is received by media playback application **501** of system **210**. Playback application **501** communicates to CCM **300**, via coupling **520**, to determine whether incoming media **499** is protected by any copyright restrictions and/or licensing agreements. Playback application **501** communicates with CCM **300** to control switch **311**, **312**, and **571** accordingly. In the present example, recording of incoming media **499** would violate applicable restrictions and/or agreements and therefore switch **312** is in an open position, such that the output path to recording application **502**, (e.g., wave-out line **548** and/or wave-out line **568**), is effectively blocked, thereby preventing unauthorized recording of media **499**.

Alternatively, if media device driver **505** is selected as the default driver, incoming media **499** continues from O/S multimedia subsystem **503**, through custom audio device **310**, wave driver shim **309**, and into media device driver **505** where media **499** can be simultaneously output to media output device **570** via line **580**, and output on wave-out line **540** to wave- and outputted by media device driver **505** to wave shim driver **309** on wave-out line **542**. However, by virtue of CCM **300** controlling switch **311**, wave-out line **544** which eventually leads to recording application **502** is blocked, thus effectively preventing unauthorized recording of media **499**.

It is noted that by virtue of CCM **300** controlling both switches **311** and **312** and therefore controlling wave-out line **548** and wave-out line **568**, any incoming media files, (e.g., incoming media **499**), can be prevented from being recording in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media.

Still referring to FIG. **5**C, it is particularly noted that although CCM **300** can prevent unauthorized recording of incoming media **499** by controlling switches **311** and **312**, thus preventing incoming media **499** from reaching recording application **502**, controlling switches **311** and **312** do nothing to prevent incoming media **499** from being captured by a peripheral digital device, (e.g., a mini-disc recorder), etc., coupled to a digital output **575** of device **570**. Thus, by also controlling the output, via digital output **575** of media hardware output device **570**, through control via switch **571**, CCM **300** can prevent unauthorized capturing of incoming media **499** from output **575**, (e.g., on a sound card for audio files, a video card for video and/or graphical files), regardless of whether incoming media **499** is received in a secure and encrypted manner. However, when switch **571** is in a closed position, incoming media **499** may be played back in an unfettered manner. Additionally, at any time during playback of media **499**, switch **312** of custom media device **310**, switch **311** of media device driver **309**, and/or switch **571** of media hardware output device **570** can be dynamically activated by CCM **300**.

FIG. **5**D is an exemplary logic/bit path block diagram **500**D of a client computer system, (e.g., **210**), configured

with a copyright compliance mechanism **300** for preventing unauthorized kernel based output and unauthorized recording of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in the manner described herein with reference to FIGS. **4**, **5**A, **5**B, **5**C, **6**, and **7**.

Diagram **500**D of FIG. **5**D is similar to diagram **500**C of FIG. **5**C, with some changes. Particularly, diagram **500**D includes a kernel streaming mechanism **515**, (e.g., DirectKS), that is coupled with a media device driver **505**. In one embodiment, DirectKS **515** can be used for establishing a direct connection with media device driver **505**. In the present embodiment, media device driver **505** is shown to include a switch **511** controlled by CCM **300** via communication line **524**, that is similar to switches **311**, **312**, and **571**, for controlling output of incoming media **499**.

In one embodiment, CCM **300** is communicatively coupled with playback application **501** via coupling **520**, waveform driver shim **309** via coupling **522**, custom media device **310**, via coupling **525**, and media device driver **505** via coupling **524**. Specifically, CCM **300** is coupled to and controls a selectable switch **311** of waveform driver shim **309** via coupling **522**. CCM **300** is also coupled to and controls a selectable switch **312** of custom audio device **310** via coupling **521**. CCM **300** is further coupled to and controls a selectable switch **511** in media device driver **505** via coupling **524**. Depending upon the copyright restrictions and/or licensing agreements applicable to an incoming media file, e.g., (e.g., media **499**), CCM **300** controls whether switches **311** and **312** are open (shown), thus preventing the incoming media **499** from reaching a recording application, or closed (not shown) so as to allow recording of the incoming media **499**. Additionally, CCM **300** controls whether switch **511** is open (shown), thus preventing incoming media **499** from being returned from media device driver **505** to DirectKS **515** which can capture incoming media **499** and redirect it to recording application **502** to create an unauthorized copy or recording of incoming media **499**. CCM **300** can also control whether switch **511** is closed (not shown) to allow DirectKS **515** to capture and redirect incoming media **499** to recording application **502**.

DirectKS **515**, in one embodiment, may represent a kernel streaming mechanism that is adapted to establish a direct connection with a media device driver **505** of an operating system operable on client computer system **210**, enabling kernel level access to media device driver **505**. A kernel streaming mechanism can be implemented for the purpose of precluding utilization of standard audio APIs (application programming interfaces) to play or record media content, with particular attention paid to those playback applications with low latency requirements. DirectKS **515** can bypass existing APIs and communicate with media device driver **505**. DirectKS **515** can be readily adapted to work in conjunction with a playback application, (e.g., **501**), via coupling **581** to capture and redirect incoming media **499** and redirect it to driver **505** via coupling **583** and then to recording application **502**, via wave-out line **588**. Accordingly, DirectKS **515** can be implemented to create unauthorized media recordings.

By controlling media device driver **505**, copyright compliance mechanism **300** can prevent unauthorized output of incoming media **499** to, e.g., a digital recording device **529** that may be coupled with recording application **502**. In one embodiment, media device driver **505** is configured through the kernel mixer (not shown) to control the data path. Additionally, in one embodiment, CCM **300** is enabled to also detect a kernel streaming mechanism **515** (e.g., DirectKS) that may be operable on client computer system **210**, as described herein with reference to FIG. **3**.

In one embodiment, custom media device **310** mandates explicit selection through system **210**, meaning that custom media device **310** is selected as a default driver of system **210**. By virtue of having the selection of custom media device **310** as the default driver of system **210**, the data path necessary for direct sound **504** to capture the media content is selectively closed.

For example, incoming media **499** originating from nearly any source described herein with reference to FIG. **5**A is received by media playback application **501** of system **210**. Playback application **501** communicates to CCM **300**, via connection **520**, to determine whether incoming media **499** is protected by any copyright restrictions and/or licensing agreements. Playback application **501** communicates with CCM **300** to control switches **311**, **312**, **571**, and **511**, accordingly. In the present example, recording of incoming media **499** would violate applicable restrictions and/or agreements and therefore switch **511** is in an open position, such that the output path to recording application **502**, (e.g., wave-out line **548** and/or wave-out line **568** and/or wave-out line **588**), is effectively blocked, thereby preventing unauthorized recording of media **499**.

Still referring to FIG. **5**D, it is particularly noted that although CCM **300** can prevent unauthorized recording of incoming media **499** by controlling switches **311**, **312**, and **571**, thus preventing incoming media **499** from reaching recording application **502**, controlling switches **311**, **312**, and **571**, do nothing to prevent incoming media **499** from being returned to recording application **502** by a kernel streaming mechanism **515** (e.g., DirectKS), which enables capturing and redirecting of incoming media **499** to recording application **502**, via wave-out line **588**. Thus, by also controlling switch **511** of media device driver **505**, CCM **300** can prevent kernel streaming mechanism **515** from returning incoming media **499** to recording application **502**, thereby preventing incoming media **499** from being captured and redirected to recording application **502** in an attempt to create and unauthorized copy and/or recording of incoming media **499**. However, when switch **511** is in a closed position, incoming media **499** may be returned to a recording application **502**, such that recording could be possible, provided recording does not violate copyright restrictions and/or licensing agreements applicable to incoming media **499**. Additionally, at any time during playback of media **499**, switch **312** of custom media device **310**, switch **311** of wave shim driver **309**, and/or switch **511** of media device driver **505** can be dynamically activated by CCM **300**.

FIG. **6**A is an block diagram of a media file, (e.g., incoming media **499**), adapted to be received by a playback application, (e.g., **501** of FIGS. **5**A, **5**B, **5**C, and **5**D), configured with an indicator **605** for enabling incoming media **499** to comply with rules according to the SCMS (serial copy management system). When applicable to a media file, (e.g., **499**), the SCMS allows for one copy of a copyrighted media file to be made, but not for copies of copies to be made. Thus, if incoming media **499** can be captured by a recording application, (e.g., **502** of FIGS. **5**A, **5**B, **5**C, and/or **5**D), and/or a recording device, (e.g. **529**), and/or a peripheral recording device and/or a recording application coupled to a digital output of a media hardware output device, (e.g., digital output **575** of media hardware output device **570** of FIGS. **5**B, **5**C), and **5**D, and/or a kernel streaming mechanism **515**, (e.g., DirectKS of FIG. **5**D), unauthorized copying and/or recording may be accomplished.

Playback application **501** is coupled with CCM **300** via communication line **520** in a manner analogous to FIGS. **5**A, **5**B, **5**C, and/or **5**D. Although not shown in FIG. **6**, it is noted that CCM **300** is also coupled to switches **311** and **511** as shown in FIG. **5**A, switches **311** and **312** in FIG. **5**B, switches **311**, **312**, and **571** in FIG. **5**C, and switches **312**, **311**, **571**, and **511**, in FIG. **5**D.

In one embodiment, an indicator **605** is attached to incoming media **499** for preventing unauthorized copying or recording in accordance with the SCMS. In one embodiment, indicator **605** can be a bit that may be transmitted prior to beginning the delivery of incoming media **499** to playback application **501**. In another embodiment, indicator **605** may be placed at the beginning of the bit stream of incoming media **499**. In yet another embodiment, indicator **605** may be placed within a frame period of incoming media **499**, (e.g., every fifth frame), or any other desired frame period. In another embodiment, indicator **605** may be transmitted at a particular time interval or intervals during delivery of the media file, (e.g. incoming media **499**). Thus, indicator **605** may be placed nearly anywhere within or attached to the bit stream related to incoming media **499**.

Within FIG. **6**, indicator **605** may be comprised of various indicators, (e.g., a level 0 indicator, a level 1 indicator, and a level 2 indicator), in one embodiment of the present invention. In the present embodiment, a level 0 indicator may be for indicating to CCM **300** that copying is permitted without restriction, (e.g., incoming media **499** is not copyrighted or that the copyright is not asserted). In the present embodiment, a level 1 indicator may be for indicating to CCM **300** that one generation of copies of incoming media **499** may be made, such that incoming media **499** is an original copy and that one copy may be made. In the present embodiment, a level 2 indicator may be for indicating to CCM **300** that incoming media **499** is copyright protected and/or a copy thereof, and as such no digital copying is permitted.

For example, incoming media **499** is received by playback application **501**. Application **501** detects an indicator **605** attached therewith, in this example, a level 2 bit is placed in the bit stream for indicating to CCM **300** that copying is not permitted. As such, when CCM **300** is configured in system **210** such as that shown in FIG. **5**A, in response to a level 2 indicator bit, CCM **300**, while controlling the audio path, then activates switches **311** and **511** to prevent any recording of incoming media **499**.

However, CCM **300** is configured in system **210** such as that shown in FIG. **5**B, in response to a level 2 indicator bit, CCM **300**, while controlling the media path, then activates switches **311** and **312** to prevent any recording of incoming media **499**.

Alternatively, when CCM **300** is configured in system **210** such as that shown in FIG. **5**C, in response to a level 2 indicator bit, CCM **300**, while controlling the media path, then activates switches **311**, **312**, and **571** to prevent any recording of incoming media **499**.

It is noted that CCM **300** can activate or deactivate switches coupled therewith, as described herein with reference to FIGS. **5**A-**5**D, thereby funneling incoming media **499** through the secure media path, in this instance the audio path, to prevent unauthorized copying of incoming media **499**. It is further noted that CCM **300** can detect media recording applications and devices as described herein, with reference to FIG. **3**.

FIGS. **7**A, **7**B, and **7**C, are a flowchart **700** of steps performed in accordance with one embodiment of the present invention for controlling end user interaction of delivered electronic media. Flowchart **700** includes processes of the present invention which, in some embodiments, are carried out by processors and electrical components under the control of computer readable and computer executable instructions. The computer readable and computer executable instructions reside, for example, in data storage features such as computer usable volatile memory **104** and/or computer usable non-volatile memory **103** of FIG. **1**. However, the computer readable and computer executable instructions may reside in any type of computer readable medium. Although specific steps are disclosed in flowchart **700**, such steps are exemplary. That is, the present embodiment is well suited to performing various other steps or variations of the steps recited in FIGS. **7**A, **7**B, and **7**C. Within the present embodiment, it should be appreciated that the steps of flowchart **700** may be performed by software, by hardware or by any combination of software and hardware.

The present embodiment provides a method for restricting recording of high fidelity media content delivered via one or more communication networks. The present embodiment delivers the high fidelity media content to registered clients while preventing unauthorized clients from directly receiving media content from a source database. Once the client computer system receives the media content, it can be stored in hidden directories and/or custom file systems that may be hidden to prevent subsequent unauthorized sharing with others. It is noted that various functionalities can be implemented to protect and monitor the delivered media content. For example, the physical address of the media content can be hidden from media content recipients. Alternatively, the directory address of the media content can be periodically changed. Additionally, an access key procedure and rate control restrictor can also be implemented to monitor and restrict suspicious media content requests. Furthermore, a copyright compliance mechanism, (e.g., CCM **300**), can be installed in the client computer system **210** to provide client side compliance with licensing agreements and/or copyright restrictions applicable to the media content. By implementing these and other functionalities, the present embodiment restricts access to and the distribution of delivered media content and provides a means for copyrighted media owner compensation.

It is noted that flowchart **700** is described in conjunction with FIGS. **2**, **3**, **4**, and **5**A-**5**D, in order to more fully describe the operation of the present embodiment. In operation **702** of FIG. **7**A, a user of a computer system, (e.g., **210**), causes the computer to communicatively couple to a web server, (e.g., **250**), via one or more communication networks, (e.g., Internet **201**), and proceeds to attempt to log in. It is understood that the log in process of operation **702** can be accomplished in a variety of ways in accordance with the present invention.

In operation **704** of FIG. **7**A, web server **250** accesses a user database, (e.g., **450**), to determine whether the user and the computer system **210** logging in are registered with it. If the user and computer system **210** are registered with web server **250**, the present embodiment proceeds to operation **714**. However, if the user and computer system **210** are not registered with web server **250**, web server **250** can initiate a user and computer system **210** registration process at operation **706**.

In operation **706**, registration of the user and computer system **210** is initiated. The user and computer system registration process can involve the user of computer system **210** providing personal information including, but not limited to, their name, address, phone number, credit card number, online payment account number, biometric identification (e.g., fingerprint, retinal scan, etc.), and the like. Web server **250** can verify the accuracy of the information provided. Web server **250** can also acquire information regarding the user's

computer system **210** including, but not limited to, identification of media players disposed and operable on system **210**, a unique identifier corresponding to the computer system, etc. In one embodiment, the unique identifier corresponding to the computer system can be a MAC address. Additionally, web server **250** can further request that the user of computer system **210** to select a username and password.

In operation **708** of FIG. **7**A, subsequent to the completion of the registration process, web server **250** generates a unique user identification (ID) or user key associated with the user of client computer system **210**. The unique user ID, or user key, is then stored by web server **250** in a manner that is associated with that registered user. Furthermore, one or more cookies containing that information specific to that user and the user's computer system **210**, is installed in a non-volatile memory device, (e.g., **103** and/or data storage device **108** of computer system **210**). It is noted that the user ID and cookie can be stored in a hidden directory within one or more non-volatile memory devices within computer system **210**, thereby preventing user access and/or manipulation of that information. It is further noted that if the unique user ID, or user key, has been previously generated for the user and computer **210** that initially logged-in at operation **702**, the present embodiment proceeds to operation **714**

In operation **710**, web server **250** verifies that the user ID and the cookie(s) are properly installed in computer system **210** and verifies the integrity of the cookie(s) and the user ID, thereby ensuring no unauthorized alterations to the user ID or the cookie(s) has occurred. If the user ID is not installed and/or not valid, web server **250** can re-initiate the registration process at operation **706**. Alternatively, web server **250** can decouple computer system **210** from the network, thereby requiring a re-log in by the user of computer **210**. If the cookie(s) and user ID are valid, the present embodiment proceeds to operation **712**.

In operation **712** of FIG. **7**A, web server **250** can install a version of a copyright compliance mechanism, (e.g., **300**), onto one or more non-volatile memory devices of computer system **210**. Installing CCM **300** into user's computer system **210** can facilitate client side compliance with licensing agreements and copyright restrictions applicable to specific delivered copyrighted media content. At operation **712**, the components of CCM **300**, such as instructions **301**, coder/decoder (codec) **303**, agent programs **304**, system hooks **305**, skins **306**, and custom media device drivers **307** (e.g., custom media device **310** of FIGS. **5**B-**5**D), are installed in computer system **210**, such as that shown in FIGS. **5**A-**5**D. In one embodiment, a hypertext transfer protocol file delivery system can be utilized to install CCM **300** into computer system **210**. However, operation **712** is well suited to install CCM **300** on computer system **210** in a wide variety of ways in accordance with the present embodiment. For example, CCM **300** can be installed as an integrated component within a media player application, media recorder application, and/or media player/recorder applications. Alternatively, CCM **300** can be installed as a stand alone mechanism within a client computer system **210**. Additionally, CCM **300** can be installed as a stand alone mechanism and/or as part of a bundled application from a media storage device, (e.g., a CD, a DVD, an SD), and/or as part of an installation package. In another embodiment, CCM **300** can be installed in conjunction with a presentation of desired media content, (e.g., listening to an audio file on a music CD, reading a document, viewing a video, etc.). It is noted that, in one embodiment, CCM **300** may be installed on client system **210** in a clandestine manner, relative to a user.

In operation **714**, web server **250** can request the previously established username and password of the user of client computer system **210**. Accordingly, the user of client computer system **210** causes it to transmit to web server **250** the previously established username and password. Upon the receipt thereof, web server **250** may access a user database, (e.g., **450**), to determine their validity. If the username and password are invalid, web server **250** refuses access wherein flowchart **700** may be discontinued (not shown). Alternatively, if the username and password are valid, the present embodiment proceeds to operation **716**.

In operation **716** of FIG. **7**A, web server **250** can access media file database **450** to determine if copyright compliance mechanism **300** has been updated to reflect changes made to the DMCA (Digital Millennium Copyright Act) and/or to the interactive/non-interactive licensing agreements recognized by the DMCA. It is noted that alternative licensing agreements can be incorporated into copyright compliance mechanism **300**. Advantageously, by providing a copyright compliance mechanism that can be readily updated to reflect changes in existing copyright restrictions and/or the introduction of other types of licensing agreements, and/or changes to existing media player applications, and/or the development of new media player applications, copyright compliance mechanism **300** can provide compliance with current copyright restrictions associated with the media content.

Continuing with operation **716**, if web server **250** determines that CCM **300**, or components thereof, of computer **210** has not been updated, web server **250** initiates installation of the newer components and/or the most current version of CCM **300** into computer system **210**, shown as step **718**. If web server **250** determines that the current version of CCM **300** installed on system **210** does not have to be updated, the present embodiment proceeds to operation **720** of FIG. **7**B.

In operation **720** of FIG. **7**B, the user of client computer system **210** causes it to transmit to web server **250**, (e.g., via Internet **201**), a request for a play list of available media files. It is noted that the play list can contain all or part of the media content available from a content server, (e.g., **251**).

In operation **722**, in response to web server **250** receiving the play list request, web server **250** transmits to client computer system **210** a media content play list together with the unique user ID associated with the logged-in user. The user ID, or user key, can be attached to the media content play list in a manner invisible to the user. It is noted that the media content in content server **251** can be, but is not limited to, high fidelity music, audio, video, graphics, multimedia, alphanumeric data, software applications, and the like. The media content play list of operation **720** can be implemented in diverse ways. In one example, web server **250** can generate a media content play list by combining all the available media content into a single play list. Alternatively, all of the media content titles, or different lists of titles, can be loaded from content server **251** and passed to a CGI (common gateway interface) program operating on web server **250** where the media titles, or differing lists of titles, can be concatenated into a single dimensioned array that can be provided to client computer system **210**. It is understood that the CGI can be written in nearly any software computing language.

In operation **724** of FIG. **7**B, the user of client computer system **210** can utilize the received media content play list in conjunction with a media player application in order to cause client computer system **210** to transmit a request to web server **250** for delivery of desired media content, and wherein the user ID is automatically included therewith. The media content play list provided to client computer system **210** by web server **250** can enable the user to create one or more

customized play lists by the user selecting desired media content titles. It is noted that a customized media play list can establish the media content that will eventually be delivered to client computer system **210** and the order in which the content will be delivered. Additionally, the user of client computer system **210** can create one or more customized play lists and store those play lists in system **210** and/or within web server **250**. It is noted that a customized play list does not actually contain the desired media content titles, but rather the play list includes one or more identifiers associated with the desired media content that can include, but is not limited to, a song, an audio clip, a video clip, a picture, a multimedia clip, an alphanumeric document, or particular portions thereof. In another embodiment, the received media content play list can include a random media content delivery choice that the user of client computer system **210** can transmit to web server **250**, with the user ID, to request delivery of the media content in a random manner.

In operation **726**, upon receiving the request for media content from client computer system **210**, web server **250** determines whether the requesting media application operating on client computer system **210** is a valid media application. One of the functions of a valid media application is to be a player of media content as opposed to an application that downloads media content in an unauthorized or unregulated manner. If web server **250** determines that the media application operating on system **210** is not a valid media application, the present embodiment proceeds to operation **727** which in one embodiment, redirects client computer system **210** to a web site where the user of system **210** can download a valid media player application or to a software application which can identify client computer system **210**, log system **210** out of web server **250** and/or prevent future logging-in for a defined period of time, (e.g., 15 minutes, an hour, a day, a week, a month, a year, or any specified amount of time). If web server **250** determines that the media application operating on system **210** is a valid media application, the present embodiment proceeds to operation **728**.

In operation **728** of FIG. **7**B, the present embodiment causes web server **250** to determine whether the user ID (or user key) that accompanied the media delivery request sent by client computer system **210** is valid. If web server **250** determines that the user ID is invalid, the present embodiment proceeds to operation **729** where client computer system **210** can be logged off web server **250** or client computer system **210** can be returned to step **706** (of FIG. **7**A) to re-register and to have another unique user ID generated by web server **250**. It is noted that the order in which operations **726** and **728** are performed can be altered such that operation **728** can be performed prior to operation **726**. If web server **250** determines that the user ID is valid, the present embodiment proceeds to operation **730**.

In operation **730**, prior to web server **250** authorizing the delivery of the redirect and access key for the requested media file content, shown as operation **732**, CCM **300** governs certain media player applications and/or functions thereof that are operable on client computer system **210**. These governed functions can include, but are not limited to, pause, stop, progress bar, save, etc. It is noted that, in one embodiment, CCM **300** can utilize system hooks **305** to accomplish the functionality of operation **730**.

In operation **732** of FIG. **7**C, the present embodiment causes web server **250** to transmit to client computer system **210** a redirection command along with a time sensitive access key (e.g., for that hour, day or for any defined period of time) thereby enabling client computer system **210** to receive the requested media content. The redirection command can include a time sensitive address of the media content location within content server **251**. The address is time sensitive because, in one embodiment, the content server **251** periodically renames some or all of the media address directories, thereby making previous content source addresses obsolete. Alternatively, the address of the media content is changed. In another embodiment, the location of the media content can be changed along with the addresses. Regardless, unauthorized users and/or applications are restricted from directly retrieving and/or copying the media content from content server **251**. Therefore, if someone with inappropriate or unlawful intentions is able to find where the media content is stored, subsequent attempts will fail, as the previous route no longer exists, thereby preventing future unauthorized access.

It is noted that in one embodiment of the present invention, the addresses (or routes) of content server **251** that are actively coupled to one or more client computer systems (e.g., **210**-**230**) are maintained while future addresses, or routes, are being created for new client devices. It is further noted that as client computer systems are uncoupled from the media content source of content server **251**, that directory address, or link, can be immediately changed, thereby preventing unauthorized client system or application access.

In another embodiment, the redirection of client computer system **210** to content server **251** can be implemented by utilizing a server network where multiple servers are content providers, (e.g., **251**), or by routing a requesting client computer system (e.g., **210**, **220**, or **230**) through multiple servers. In yet another embodiment, the delivery of media content from a central content provider (e.g., **251**) can be routed through one or more intermediate servers before being received by the requesting client computer system, (e.g., **210**).

The functionality of operation **732** is additionally well suited to provide recordation of the Internet Protocol (IP) addresses of the client computer systems, (e.g., **210**), the media content requested and its transfer size, thereby enabling accurate monitoring of royalty payments, clock usage and transfers, and media content popularity.

In operation **734** of FIG. **7**C, upon receiving the redirection command, the present embodiment causes the media playback application **501** (FIGS. **5**A-**5**D) operating on client computer system **210** to automatically transmit to content server **251***a* new media delivery request which can include the time sensitive access key and the address of the desired media content.

In operation **736** of FIG. **7**C, content server **251** determines whether the time sensitive access key associated with the new media delivery request is valid. If content server **251** determines that the time sensitive access key is valid, the present embodiment proceeds to operation **738** of FIG. **7**C. However, if content server **251** determines that the time access key is not valid, the present embodiment proceeds to operation **737**, a client redirect.

In operation **737**, content server redirects client computer **210** to operation **732** (not shown) where a new access key is generated. Alternatively, operation **737** causes the present embodiment to return to operation **704** of FIG. **7**A. In yet another embodiment, operation **737** can cause client computer system **210** to be disconnected from content server **251**.

In operation **738** of FIG. **7**C, content server **251** transmits the requested high fidelity media content to client computer system **210**. It is noted that each media content file delivered to client computer system **210** can have a header attached thereto, prior to delivery, as described herein with reference to FIG. **4**. It is further noted that both the media content and the header attached thereto can be encrypted. In one embodi-

ment, the media content and the header can be encrypted differently. Alternatively, each media content file can be encrypted differently. In another embodiment, groups of media files are analogously encrypted. It is noted that public domain encryption mechanisms, (e.g., Blowfish), and/or non-public domain encryption mechanisms can be utilized.

Still referring to operation **738**, content server **251** can transmit the requested media content in a burst load (in comparison to a fixed data rate), thereby transferring the content to client computer system **210** as fast as the network transfer rate allows. Further, content server **251** can have its download rate adapted to be equal to the transfer rate of the network to which it is coupled. In another embodiment, the content server **251** download rate can be adapted to equal the network transfer rate of the client computer system **210** to which the media content is being delivered. For example, if client computer system **210** is coupled to Internet **201** via a T1 connection, then content server **251** transfers the media content at transmission speeds allowed by the T1 connection line. As such, once the requested media content is transmitted to client computer system **210**, content server **251** is then able to transmit requested media content to another client computer system, (e.g., **220** or **230**). Advantageously, this provides an efficient means to transmit media content, in terms of statistical distribution over time and does not overload the communication network(s).

It is noted that delivery of the requested media content by content server **251** to client computer system **210** can be implemented in a variety of ways. For example, an HTTP (hypertext transfer protocol) file transfer protocol can be utilized to transfer the requested media content as well as a copyright compliance mechanism **300** to client **210**. In this manner, the copyright compliance mechanism as well as each media content file/title can be delivered in its entirety. In another embodiment, content server **251** can transmit to client computer system **250** a large buffer of media content, (e.g., audio clips, video clips, and the like).

In operation **740** of FIG. **7**C, upon receiving the requested high fidelity media content from content server **251**, the present embodiment causes client computer system **210** to store the delivered media content in a manner that is ready for presentation, (e.g., playback). The media content is stored in client computer system **210** in a manner that restricts unauthorized redistribution. For example, the present embodiment can cause the high fidelity media content to be stored in a volatile memory device (e.g., **103**), utilizing one or more hidden directories and/or custom file systems that may be hidden, where it may be cached for a limited period of time. Alternatively, the present embodiment can cause the high fidelity media content to be stored in a non-volatile memory device, (e.g., **104**) or data storage device (e.g., **109**). It is noted that the manner in which each of the delivered media content file(s) is stored, volatile or non-volatile, can be dependent upon the licensing restrictions and/or copyright agreements applicable to each media content file. It is further noted that in one embodiment, when a user of client computer system **210** turns the computer off or causes client computer system **210** to disconnect from the network, the media content stored in a volatile memory device is typically deleted therefrom.

Still referring to operation **740**, in another embodiment, the present embodiment can cause client computer system **210** to store the received media content in a non-volatile manner within a media application operating therein, or within one of its Internet browser applications (e.g., Netscape Communicator™, Microsoft Internet Explorer™, Opera™, Mozilla™, and the like) so that delivered media content can be used in a repetitive manner. Further, the received media content can be stored in a manner making it difficult for a user to redistribute in an unauthorized manner, while allowing the user utilization of the received media content, (e.g., by utilizing one or more hidden directories and/or custom file systems that may also be hidden). It is noted that by storing media content with client computer system **210** (when allowed by applicable licensing agreements and/or copyright restrictions), content server **251** does not need to redeliver the same media content to client computer system **210** each time its user desires to experience (e.g., listen to, watch, view, etc.) the media content file.

In operation **742** of FIG. **7**C, the received media content file is then fed into a media player application (e.g., playback application **501** of FIGS. **5**A-**5**D), which then runs it through a codec, (e.g., coder/decoder **303** of CCM **300**), in one embodiment. In response, coder/decoder **303** sends an authorization request to the content server, (e.g., **251**), with attached authorization data, as described herein. In response to receiving codec's **303** authorization request, content server **251** compares the received authorization data with that stored in server **251**, and subsequently, the present embodiment proceeds to operation **744**.

In operation **744**, the content server **251** responds with a pass or fail authorization. If server **251** responds with a fail, such that the received authorization data is invalid, the present embodiment can proceed to operation **745**, where server **251** can, in one embodiment, notify the user of client system **210**, (e.g., by utilization of skin **306**), that there was an unsuccessful authorization of the requested media content file. It is noted that alternative messages having similar meanings may also be presented to the user of client computer system **210**, thereby informing the user that the delivery failed. However, if the authorization data passes, the present embodiment proceeds to operation **746**.

In operation **746**, server **251** transmits certain data back to the media player application enabling the media player application to present the contents of the media file via media playback application **501** of FIGS. **5**A-**5**D. In one embodiment, a decryption key can be included in the transmitted data to decrypt the delivered media content file. In another embodiment, an encryption/decryption key can be included in the transmitted data to allow access to the contents of the media file. The present method then proceeds to operation **748**.

In operation **748** of FIG. **7**C, subsequent to media file decryption, the media file may be passed through CCM **300**, (e.g., a codec **303**), to a media player application operating on client computer system **210**, (e.g., playback application **501** of FIGS. **5**A-**5**D), which can then access and utilize the delivered high fidelity media content, enabling its user(s) to experience the media content, (e.g., listen to it, watch it, view it, or the like). In one embodiment of the present invention, a specialized or custom media player may be involved in order to experience the media content, (e.g., skin **306** of FIG. **3**). Skin **306** may be implemented when CCM **300** cannot modify an industry standard media player application to comply with copyright restrictions and/or licensing agreements in accordance with the DMCA. Alternatively, a specialized or custom media player may not be needed to experience the media content. Instead, an industry standard media player can be utilized by client computer system **210** to experience the media content. Typically, many media player applications are available and can include, but are not limited to, Windows™ Media Player™ for PCs (personal computers), iTunes™ Player or QuickTime™ for Apple computers, and XMMS player for computers utilizing a Linux operating system. Regardless of the media player application utilized, while the media file is passed to the media player application, (e.g., in a

frame by frame basis or in a buffer by buffer basis), coder/decoder **303** will repeatedly ensure that CCM **300** rules are being enforced at any particular moment during media playback, shown as operation **750**.

In operation **750**, as the media file content is delivered to the media player application, (e.g., media player application **501** of FIGS. **5**A-**5**D), periodically, (e.g., after a specified number of frames, after a defined period of time, or any desired time or data period), coder/decoder **303** repeatedly determines whether or not all the rules are enforced, in accordance with rules as defined by CCM **300**. If the rules are not enforced, (e.g., change due to a user opening up a recording application (e.g., Total Recorder or alternative application)) the present method proceeds to operation **751**. If the rules, in accordance with CCM **300**, are enforced, the present embodiment then proceeds to operation **752**.

In operation **751** of FIG. **7**C, if the rules according to CCM **300** are not enforced, the presentation of the media content is, in one embodiment, suspended or halted. In one embodiment, CCM **300** of FIG. **5**A can selectively control switches **311** and **511** to prevent output of incoming media **499** (FIGS. **5**A, **5**B, **5**C, and **5**D) to a recording application **502** (FIGS. **5**A, **5**B, and **5**C, via wave shim driver **309** and direct sound **504** respectively, thus preventing unauthorized recording of incoming media **499**. In another embodiment, CCM **300** of FIG. **5**B can selectively control switches **311** and **312** to prevent output of incoming media **499** to recording application **502** via wave shim driver **309** and custom media device **310**, thus preventing unauthorized recording of incoming media **499**. In yet another embodiment, CCM **300** of FIG. **5**C can selectively control switches **311**, **312**, to not only prevent incoming media **499** from being recorded in an unauthorized manner but can also selectively control switch **571** to prevent unauthorized output of incoming media **499** via digital output **575** of media hardware output device **570**. In yet another embodiment, CCM **300** of FIG. **5**D can selectively control switches **311**, **312**, **571**, and **511** to a prevent kernel streaming mechanism **515**, (e.g., DirectKS) which can establish a connection with media device driver **505** of FIG. **5**D, from capturing incoming media content and returning it to a recording application (e.g., **502**) to create an unauthorized recording of the media content. In one embodiment, incoming media **499** may not be output from digital output **575**. In another embodiment, incoming media **499** may be output via digital output **575** but in an inaudible manner, (e.g., silence). In yet another embodiment, incoming media **499** can be audible but recording functionality can be disabled, such that the media content cannot be recorded.

In operation **752**, if the rules are enforced in accordance with CCM **300**, codec **303** retrieves a subsequent portion of the media content that is stored locally in client computer system **210**. The newly retrieved portion of the media file is then presented by the client's media player application, shown in the present method as step **748**. While the newly retrieved portion is presented, embodiments of the present method then again perform step **750**, then step **752** or **751**, then step **748**, then **750**, etc., in a continual loop until the media file contents are presented in their entirety. Advantageously, by constantly monitoring playing media files, CCM **300** can detect undesired activities and enforce those rules defined by CCM **300**.

FIG. **8** is a diagram of an exemplary high-speed global media content delivery system **800**, in accordance with an embodiment of the present invention. In one embodiment, system **800** can be utilized to globally deliver media content, e.g., audio media, video media, graphic media, multimedia, alphanumeric media, etc., to one or more client computer systems, (e.g., **210**, **220**, and/or **230**), in conjunction with a manner of delivery similar to that described herein. In one embodiment, system **800** includes a global delivery network **802** that can include multiple content servers, (e.g., **804**, **806**, **808**, **810**, **812**, **814**, and **816**), that can be located throughout the world and which may be referred to as points of presence or media delivery point(s). Each of content server **804-816** can store a portion, a substantial portion, or the entire contents of a media content library that can be delivered to client computer systems via one or more networks, (e.g., Internet **201**, or a WAN (wide area network)). Accordingly, each of content server **804-816** can provide media content to of client computer systems in its respective vicinity of the world. Alternatively, each content server can provide media content to a substantial number of client computer systems

For example, a media delivery point (MDP) **816**, located in Tokyo, Japan, is able to provide and deliver media content from the media content library stored in its content database, (e.g., **451**), to client computer systems within the Asiatic regions of the world while a media delivery point **812**, located in New York City, N.Y., USA, is able to provide and deliver media content from its stored media content library to client devices within the Eastern United States and Canada. It is noted that each city name, (e.g., London, Tokyo, Hamburg, San Jose, Amsterdam, or New York City), associated with one of the media delivery points **804-816** represents the location of that particular media delivery point or point of presence. However, it is further noted that these city names are exemplary because media delivery points **804-816** can be located anywhere within the world, and as such are not limited to the cities shown in global network **802**.

Still referring to FIG. **8**, it is further noted that global system **802** is described in conjunction with FIGS. **2**, **3**, **4**, **5**A-D, and **6**, in order to more fully describe the operation of embodiment. Particularly, subsequent to a client computer system, e.g., client computer system **210** of FIG. **2**, interacting with a web server, (e.g., web server **250** of FIG. **2**), as described herein, web server (e.g., **250** of FIG. **2**), in one embodiment, can redirect client computer system **210** to receive the desired media content from an MDP (e.g., **804-816**) based on one or more differing criteria.

For example, computer system **210** may be located in Brattleboro, Vt., and its user causes it to log-in with a web server **250** which can be located anywhere in the world. It is noted that operations **702-730** of FIGS. **7**A and **7**B can then be performed as described herein such that the present embodiment proceeds to operation **732** of FIG. **7**C. At operation **732**, the present embodiment can determine which media delivery points, (e.g., **804**, **806**, **808**, **810**, **812**, **814**, or **816**), can subsequently provide and deliver the desired media content to client computer system **210**.

Still referring to FIG. **8**, one or more differing criteria can be utilized to determine which media delivery point to select for delivery of the desired media content. For example, the present embodiment can base its determination upon which media delivery point is in nearest proximity to client computer system **210**, (e.g., media delivery point **816**). This can be performed by utilizing the stored registration information, (e.g., address), provided by the user of client computer system **210**. Alternatively, the present embodiment can base its determination upon which media delivery point provides media content to the part of the world in which client computer system is located. However, if each of the media delivery points (e.g., **804-816**) stores differing media content, the present embodiment can determine which one can actually provide the desired media content. It is noted that these are

exemplary determination criteria and the embodiments of the present invention are not limited to such implementation.

Subsequent to determination of which media delivery point is to provide the media content to client computer system **210** at operation **732**, web server **250** transmits to client computer system **210** a redirection command to a media delivery point/content server (e.g., **812**) along with a time sensitive access key, also referred to as a session key, (e.g., for that hour, day, or any defined time frame) thereby enabling client computer system **210** to eventually receive the requested media content. Within system **800**, the redirection command can include a time sensitive address of the media content location within media delivery point **812**. Accordingly, the New York City media delivery point **812** can subsequently provide and deliver the desired media content to client computer system **210**. It is noted that operations **732**-**742** can be performed by media delivery point **812** in a manner similar to content server **251** described herein.

Advantageously, by utilizing multiple content servers, (e.g., media delivery point **804**-**816**), to provide high fidelity media content to client computer systems, (e.g., **210**-**230**), located throughout the world, communication network systems of the Internet **201** do not become overly congested. Additionally, global network **802** can deliver media content to a larger number of client computer systems (e.g., **210**-**230**) in a more efficient manner. Furthermore, by utilizing communication technology having data transfer rates of up to 320 Kbps (kilobits per second) or higher, embodiments of the present invention provide for rapid delivery of the media content in a worldwide implementation.

Referring still to FIG. **8**, it is noted that media delivery points/content servers **804**-**816** of global network **802** can be coupled in a wide variety of ways in accordance with the present embodiment. For example, media delivery point **804**-**816** can be coupled utilizing wired and/or wireless communication technologies. Further, it is noted that media delivery points **804**-**816** can be functionally coupled such that if one of them fails, another media delivery point can take over and fulfill its functionality. Additionally, one or more web servers similar to web server **250** can be coupled to global network **802** utilizing wired and/or wireless communication technologies.

Within system **800**, content server/media delivery point **804** includes a web infrastructure that, in one embodiment, is a fully redundant system architecture. It is noted that each of the MDP/content server **806**-**816** of global network **802** can be implemented to include a web infrastructure in a manner similar to the implementation shown in MDP **804**.

Specifically, the web infrastructure of media delivery point **804** includes firewalls **818** and **820** which are each coupled to global network **802**. Firewalls **818** and **820** can be coupled to global network **802** in diverse ways, (e.g., utilizing wired and/or wireless communication technologies). Particularly, firewalls **818** and **820** can each be coupled to global network **702** via a 10/100 Ethernet handoff. However, system **800** is not limited in any fashion to this specific implementation. It is noted that firewalls **818** and **820** are implemented to prevent malicious users from accessing any part of the web infrastructure of media delivery point **804** in an unauthorized manner. Additionally, firewall **818** can include a device **836**, (e.g., a router or other switching mechanism), coupled therewith and a DB (database) server **840** coupled to device **836** while firewall **820** includes a device **838**, (e.g., a router or other switching mechanism), coupled therewith and a DB (database) server **842** coupled to device **838**. Furthermore, DB server **840** is coupled with device **838** and DB server **842** is coupled with device **836**.

Still referring to FIG. **8**, and within media delivery point **804**, firewall **818** is coupled to a director device **822** which is coupled to internal web application server **826** and **828**, and a hub server **830**. Firewall **820** is coupled to a director **824** which is coupled to internal web application servers **826** and **828**, and hub server **830**. Hub server **830** can be implemented in a variety of ways including, but not limited to, as a Linux hub server. Hub server **830** is coupled to a data storage device **832** capable of storing media content. Data storage device **832** can be implemented in a variety of ways, e.g., as a RAID (redundant array of inexpensive/independent disks) appliance.

It is noted that media delivery points **804**-**816** can be implemented in any manner similar to content server **250** described herein. Additionally, media delivery points **804**-**816** of the present embodiment can each be implemented as one or more physical computing devices, (e.g., computer system **100** of FIG. **1**).

In another embodiment, CCM **300** can be adapted to be disposed on a media storage device, (e.g., media storage device **999** of FIGS. **10** and **11**). Media storage device **999** can be, but is not limited to, a CD, a DVD, or other optical or magnetic storage device. By virtue of disposing a version of CCM **300** on a media storage device **999**, embodiments of the present invention can provide copy protection for audio, video, multimedia, graphics, information, data, software programs, and other forms of media that may contain copyrighted material and which may be disposed on a media storage device. Alternatively, CCM **300** can be adapted to be installed on a computer system, (e.g., **210**), via a media storage device **999** upon which it may be disposed.

FIG. **9** is a block diagram of a copyright compliance mechanism/media storage device (CCM/MSD) **900**, a version of CCM **300** adapted to be disposed on a media storage device, (e.g., media storage device **999** of FIGS. **10** and **11**) in accordance with an embodiment of the present invention. It is noted that CCM **300** in CCM/MSD **900** is analogous to CCM **300** as described in FIGS. **3**, **4**, **5**A-D, **6**A and **7**A-C. Further, CCM/MSD **900** can be readily updated in accordance with global delivery system **800**, as described in FIGS. **7**A-C, and FIG. **8**.

In one embodiment, CCM/MSD **900** is adapted to provide stand-alone compliance with copyright restrictions and/or licensing agreements applicable to media files that may be disposed on a media storage device, (e.g., media storage device **999**). In another embodiment, CCM/MSD **900** is adapted to be installed on a computer system, (e.g., **210**), to provide compliance with copyright restrictions and licensing agreements applicable to media files as described in FIGS. **3**, **4**, **5**A-D, **6**A and **7**A-C.

Referring to FIG. **9**, CCM/MSD **900** includes an autorun protocol component **910** for invoking automatic installation of CCM **300**. To deter users from attempts at defeating various features inherent to CCM **300**, (e.g., the autorun feature), CCM **300**'s monitoring program, agent program **304**, verifies that those features that are to be operational are operational, and if not, CCM **300** prohibits the user from experiencing the contents of the media storage device.

If a user somehow defeats the autorun feature, and the user attempts to utilize an application to capture an image of the content, the application will make an image of the content on the media storage device, which also images the copyright protection contained thereon. As such, when the image is played, CCM **300** recognizes the copy protection is present, and CCM **300** will only allow the user to experience the content when authorized, once CCM **300** is installed.

By virtue of the protections as described above provided by CCM **300**, users will be able to experience the content of the media storage device in the content's original high quality format, thereby obviating the need to compress the media file used on client system **210**. Advantageously, the user will no longer need to suffer through poor quality output as a result of severely compressed media files.

It is noted that when adapted to be implemented in conjunction with a secure file format, meaning that the format of the file is, without proper authorization, non-morphogenic, embodiments of the present invention also provide effective compliance with copyright restrictions and/or licensing agreements with secure files formats. CCM **300** can control the types of file formats into which the media file can be transformed, (e.g., .wav, .mp3, etc.).

In one embodiment, the autorun feature associated with a media storage device drive (e.g., **1112** of FIG. **10**) of client system **210** is activated and operational. Alternatively, a notice of required autorun activation within client system **210** may be displayed on the media storage device and/or the case in which the media storage device is stored.

In another embodiment, if CCM **300** is present or if the user is coupled to a server, then messages containing instructions on how to activate the autorun feature of client system **210** may be presented to the user.

In one embodiment autorun protocol component **910** can detect media storage device drives resident on a computer system, (e.g., **210**).

The following C++ source code is an exemplary implementation of a portion of autorun protocol component **910** for detecting media storage device drives residing and operable on client computer system **210**, according to one embodiment of the present invention.

```
if (   (dwRetVal = GetLogicalDrives( ))
    != (DWORD) 0)
{
    /* initialize variables */
    dwMask = (DWORD) 1;
    /* initialize path to root of current drive */
    _tcscpy(szDrive, _T("A:\\"));
    for (nIndex = 0, dwMask = (DWORD) 1;
         dwMask != (DWORD) 0;
         nIndex++, dwMask <<= 1)
    {
        if ((dwRetVal & dwMask) != 0)
        {
            /* construct path to root of drive */
            szDrive[0] = (TCHAR) 'A' + nIndex;
            if (GetDriveType(szDrive) == DRIVE_CDROM)
            {
                MessageBox((HWND) 0,
                           _T("CD-ROM drive found."),
                           szDrive,
                           MB_OK);
            }
            else
            {
                /* clear bit at current position */
                dwRetVal &= (~dwMask);
            }
        }
    }
}
```

In another embodiment, autorun protocol component **910** can detect whether a media storage device containing media files has been inserted into a media storage device drive coupled with client computer system **210**, (e.g., drive **1112** of FIG. **10**). In another embodiment, CCM **300** can include instructions for monitoring media storage device drive **1112**, and upon detection of drive activation, CCM **300** determines what type of media storage device has been inserted therein. Subsequently, CCM **300** can detect various triggers on the media storage device to invoke its protection, (e.g., a hidden file on newer media storage devices and/or the copyright indicator bit on legacy media storage devices), obviating the need for autorun. Upon detection, CCM **300** can invoke the appropriate protection for the associated media file.

The following C++ source code is an exemplary implementation of a portion of autorun protocol component **910** for detecting a media storage device inserted in a media storage device drive residing and operable on client computer system **210**, according to one embodiment of the present invention.

```
    /* set error mode for operation */
uiErrMode = SetErrorMode(SEM_FAILCRITICALERRORS);
/* initialize path to root of current drive */
_tcscpy(szDrive, _T("A:\\"));
for (nIndex = 0, dwMask = (DWORD) 1;
        dwMask != (DWORD) 0;
        nIndex++, dwMask <<= 1)
{
        if ((dwCDROMMask & dwMask) != 0)
        {
                /* construct path to root of drive */
                szDrive[0] = (TCHAR) 'A' + nIndex;
                if (    GetDiskFreeSpace(szDrive,
                                         &dwSectors,
                                         &dwBytes,
                                         &dwClustersFree,
                                         &dwClusters)
                != 0)
            {
                /* add bit for drive to mask */
                dwRetVal |= dwMask;
            }
    }
}
/* restore original error mode */
SetErrorMode(uiErrMode);
```

Additionally, autorun protocol component **910** can also detect changes in media, (e.g., insertion of a different media storage device **999**). Further, other media changes can be detected subsequent to adaptation of the source code including, but not limited to, detecting a previously accessed media file and/or detecting a previously inserted media storage device.

The following C++ source code is an exemplary implementation of a portion of autorun protocol component **910** for detecting a change in media, according to one embodiment of the present invention.

```
    /* initialize path to root of current drive */
_tcscpy(szDrive, _T("A:\\"));
for (nIndex = 0, dwMask = (DWORD) 1;
        dwMask != (DWORD) 0;
        nIndex++, dwMask <<= 1)
{
        /* check for presence of CD-ROM media in drive */
        if ((dwCurrMask & dwMask) != 0)
        {
            /* check if media previously in drive */
            if ((dwPrevMask & dwMask) == 0)
            {
                /* construct path to root of drive */
                szDrive[0] = (TCHAR) 'A' + nIndex;
                /* check for presence of marker on drive */
                if (IsMPBMarkerPresent(szDrive) != 0)
```

-continued

```
            {
                /* process autorun information present on drive */
                nRetVal = ProcessAutorun(szDrive);
            }
        }
    }
}
```

Still referring to FIG. **9**, CCM/MSD **900** also includes a kernel level filter driver **920** for controlling a data input path of an operating system coupled with and operable on client computer system **210**.

CCM/MSD **900** also includes a generalized filter driver **930** for controlling ripping and "burning" applications, (e.g., Nero, Roxio, Exact Audio Copy, and others), thereby preventing such activities.

The following C++ source code is an exemplary implementation of a portion of generalized filter driver **930** for controlling ripping and burning applications that may be residing on and operable within client computer system **210**, in accordance with one embodiment of the present invention.

```
bool    bDisabled;              /* flag indicating CD reads disabled */
        /* initialize variables */
        bDisabled = false;
        if (bProtected == true)
        {
            if (type == IRP_MJ_DEVICE_CONTROL)
            {
                ULONG ulIoControlCode = stack-
>Parameters.DeviceIoControl.IoControlCode;
                if (ulIoControlCode ==
                IOCTL_SCSI_PASS_THROUGH)
                {
                    SCSI_PASS_THROUGH * pspt =
                    (SCSI_PASS_THROUGH *)
Irp->AssociatedIrp.SystemBuffer;
                    if (    (pspt != NULL)
                        && (pspt->Cdb[0] ==
                        SCSIOP_READ_CD))
                    {
                        pspt->DataTransferLength = 0;
                        pspt->ScsiStatus = 0;
                        bDisabled = true;
                    }
                }
                else if (ulIoControlCode ==
                IOCTL_SCSI_PASS_THROUGH_DIRECT)
                {
                    SCSI_PASS_THROUGH_DIRECT *
psptd = (SCSI_PASS_THROUGH_DIRECT *)
Irp->AssociatedIrp.SystemBuffer;
                    if (    (psptd != NULL)
                        && (psptd->Cdb[0] ==
                        SCSIOP_READ_CD))
                    {
                        psptd->DataTransferLength = 0;
                        psptd->ScsiStatus = 0;
                        bDisabled = true;
                    }
                }
            }
        }
        if (bDisabled == true)
        {
            /* complete current request */
            status = CompleteRequest(Irp, STATUS_SUCCESS, 0);
        }
        else
        {
            /* pass request down without additional processing */
            status = IoAcquireRemoveLock(&pdx->RemoveLock, Irp);
            if (!NT_SUCCESS(status))
                return CompleteRequest(Irp, status, 0);
            IoSkipCurrentIrpStackLocation(Irp);
            status = IoCallDriver(pdx->LowerDeviceObject, Irp);
            IoReleaseRemoveLock(&pdx->RemoveLock, Irp);
        }
```

Still referring to FIG. **9**, CCM/MSD **900** includes a CCM **300**, analogous to CCM **300** of FIG. **3**, that is adapted to be installed in client computer system **210** in one or more ways described herein.

In one embodiment, kernel level filter driver **920**, generalized filter driver **930** and CCM **300** of CCM/MSD **900** are automatically installed on client computer system **210**, subsequent to insertion of media storage device **999** into a media storage device drive, (e.g., media storage device drive **1112** of FIGS. **10** and **11**). Autorun protocol component **910**, as described above, detects insertion of media storage device **999** into an appropriate drive, and initiates installation of the components, (e.g., CCM **300**, driver **920** and driver **930**). In one embodiment, drivers **920** and **930** may be temporarily installed and may be deleted upon removal of media storage device **999** from media storage device drive **1112**. In yet another embodiment, drivers **920** and **930** may be installed in hidden directories and/or files within client computer system **210**. In another embodiment, some components of CCM **300** can remain installed on client system **210**, (e.g. the monitoring program (agent program **304**)). In still another embodiment, other components, (e.g., the kernel level filter driver **920**), can be dynamically loaded and unloaded as necessary in accordance with copyright restrictions and/or licensing agreements applicable to the media file.

Embodiments of the present invention utilize software, (e.g., CCM/MSD **900**), that is placed on media storage device **999**, in conjunction with controlling software CCM **300** installed on client computer system **210**, and web server **250** and/or content server **251**, wherein each component is communicatively coupled with the other via the Internet, thereby enabling dynamic updating of CCM **300** in the manner as described with reference to FIG. **4**, and operations **716** and **718** of FIGS. **7**A-C.

In the present embodiment, CCM/MSD **900** provides a stand alone DRM that is far more sophisticated than existing DRM solutions. This is because CCM/MSD **900** goes into the data pathway of the operating system operable on client computer system **210** and obtains control of the data pathway, (e.g., filter driver **1108** of FIG. **11**), rather than exploiting inefficiencies or errors in the computer system.

FIG. **10** is a block diagram of a communicative environment **1000** for controlling unauthorized reproduction of protected media files disposed on a media storage device in accordance with an embodiment of the present invention. Included in communicative environment **1000** is a media storage device drive **1112** coupled with a client computer system **210** via a data/address bus **110**. Client computer system **210** is coupled with web server **250** and content server **251** via Internet **201**. A media storage device **999**, upon which a CCM/MSD **900** may be disposed, can be inserted in media storage device drive **1112**. As such, autorun protocol component **910** detects the insertion and automatically invokes installation of CCM **300**, kernel level filter driver **920** and generalized filter driver **930** from media storage device **999** into client computer system **210**. Subsequent to installation, CCM **300** initiates a dynamic update with web server **250** and/or content server **251**, via Internet **201**. By installing CCM **300** on client computer system, agent program **304**

(FIG. **3**) of CCM **300** is able to control the integrity of the software associated with CCM/MSD **900**. Additionally, by conferring with servers **250** and/or **251** via Internet **201** online, the CCM **300** software version on media storage device **999** and installed on client computer system **210** can be updated when circumventions occur and/or kept current from platform to platform.

Advantageously, the monitoring mechanism of agent program **304** enables constant morphing of the version of CCM **300** disposed on media storage device **999** by communicating with server **250** and/or **251** and utilizing the dynamic update capabilities of global network **800** to readily update that which has been installed on client computer system **210**, via media storage device **999**.

In one embodiment, the installation is performed clandestine with respect to the user and is initiated by inserting media storage device **999** into an appropriate media storage device drive, (e.g. a magnetic/optical disk drive or alternative device drive coupled with client system **210**). If the user is not registered with CCM **300**, as described herein with reference to FIG. **4** and FIGS. **7**A-**7**C, once installed, CCM **300** initiates an update process with web server **250** and/or content server **251** to readily include updates that have been invoked subsequent to release of the media file on media storage device **999**. By virtue of the dynamic update capabilities of CCM **300**, regardless of the version of CCM **300** on media storage device **999**, CCM **300** provides compliance with copyright restrictions and/or licensing agreements applicable to the media file on media storage device **999**. Advantageously, enabling dynamic adaptability of CCM **300** provides for continued interoperability with new and updated operating systems, advancements in electronic technology, communication technologies and protocols, and the like, ensuring the effectiveness of CCM **300** into the future.

In another embodiment, if the user is a registered user with global delivery system **800**, CCM **300** can detect which version is most current. Accordingly, when the version existing on client system **210** is more current that the version (for install) on media storage device **999**, CCM **300** can bypass the install process and present the contents contained on media storage device **999** to the user for them to experience.

Further advantageous, this technology is backward compatible with media storage device drives manufactured subsequent to and including the year 1982. Additionally, CCM **300** is compatible with media storage devices having a copyright indicator bit disposed thereon. The copyright indicator bit has been included on all CDs released since the year 1982.

In the present embodiment of FIG. **10**, the media content is not encrypted on media storage device **999**. In one embodiment, if the media content is encrypted on computer **210**, it can be decrypted on the computer **210**. However, home players and/or stand alone media playing devices rarely include a decryption mechanism, and to experience the music on a home machine, the music is conventionally not encrypted.

In one embodiment, an additional component of CCM **300** is that the trigger for agent program **304** may be the copyright bit indicator. This means when the copyright indicator bit is detected by CCM **300**, the functions of CCM **300** are initiated. Alternatively, in another embodiment, when the copyright bit indicator is not detected, CCM **300** may remain in an un-invoked or idle state. If CCM **300** can detect the copyright bit indicator, CCM **300** can provide the appropriate compliance with regard to copyright restrictions and/or licensing agreements applicable to the media files.

In an alternative embodiment, a trigger control in the table of contents of a media storage device **999** includes instructions for triggering autorun protocol **910** of CCM/MSD **900** and can utilize the copyright indicator bit or alternative implementation to trigger the technology. In this manner, CCM **300** can control copyrighted works while public domain material can be experienced and reproduced at a user's discretion. Because autorun can be problematic for media storage device manufacturers, embodiments of CCM/MSD **900** can include alternative autorun programs that perform analogous to autorun.

In another embodiment, CCM **300** can invoke its own proprietary player, (e.g., custom media device **310**) as described with reference to FIG. **3**, thus enabling increased control of copyright restrictions and/or licensing agreements applicable to the media. By invoking custom media device **310**, CCM **300** enables user experience of the media while providing protection against unauthorized reproduction of the media disposed on media storage device **999**.

In an alternative embodiment, the media files and the CCM/MSD **900** disposed on a media storage device **999** are encrypted. This implementation is particularly advantageous for demonstration (demo) versions of media files, beta test versions, and the like that may be disposed on media storage device **999**. It is noted that the present embodiment is operable in an online environment, meaning that client computer system **210** is communicatively coupled with web server **250** and/or content server **251** to enable a user experience of the content on a demo version of media storage device **999**. In this implementation, CCM **300** allows for specific plays for specific users, which can be controlled via a network, (e.g., network **1000** of FIG. **10**), and server **250** and/or **251**.

In another embodiment, CCM **300** can be implemented for demo and/or pre-release protection. In this embodiment, CCM **300** utilizes sophisticated encryption technology to encrypt the table of contents and CCM **300** with an associated decrypted key located on client computer system **210**. Encrypting CCM **300** can also deter nefarious attempts to reverse engineer CCM **300**. Decryption can be performed using an associated decryption key. Alternatively, decryption can be performed by a proprietary or custom media player application resident on demo media storage device, (e.g., **999**).

The content of media storage device **999** is encrypted, using various levels of encryption to provide protection levels commensurate with copyright holders desires and required protection. For example, media storage device **999** is delivered to a user or critic for the purposes of review, the user inserts media storage device **999** into the appropriate storage device reader or connector coupled with the journalist's computer (e.g., **210**), and CCM **300** is installed on client system **200** in a manner clandestine to the user. Once installed, CCM **300** initiates a communication session with web server **250**/content server **251**, where content server **251** can provide authorization for the user to experience the media on media storage device **999**.

Accordingly, if the user, to whom demo media storage device **999** had been released, had demo media storage device **999** stolen, or if the user allowed alternative parties to experience the content of media storage device **999**, the unauthorized party would have to try to crack the encryption keys and the encryption of the actual content of media storage device **999**, consuming non-trivial amounts of time.

Thus, CCM **300** is able to control which users receive authorization to experience the media of media storage device **999**, how many times the user may experience the media, and CCM **300** may also define a period of time until the media may no longer be accessible. This may enable copyright

holders to release the content on an authorized media storage device, (e.g., **999**), prior to "pirated" copies flooding the market.

Accordingly, a demo media storage device **999** may be configured such that a first user may get a copy, a second user may get a copy, and if it is known that the second user will share the demo with a third and a fourth user, then the known users would be enabled to experience the media. Advantageously, by virtue of defining which users can access and experience the media, any unauthorized sharing of the media by one of the authorized users can be readily detected, and further sharing or experiencing of the media may be halted. Additionally, because the authorized user shared the media in an unauthorized manner, in a worse case scenario, criminal charges could be filed against that user.

It is noted that placing CCM/MSD **900** on a media storage device, (e.g., **999**), so as to enable installation of CCM **300** on client system **210** is one manner in which CCM **300** can be installed on client system **210**. An alternative manner in which CCM **300** can be installed on client computer system **210** is through "cross-pollination." For example, webcasters broadcast the media file to the user. The media file has a CCM **300** coupled with the media file, and upon downloading the media file onto client computer system **210**, embodiments of the present invention enable the installation of CCM **300** onto client computer system **210**. In another manner, CCM **300** is incorporated into and becomes part of an operating system operational on client system **210**. Alternatively, laws are passed that mandate the inclusion of CCM **300** on each client computer system **210**.

FIG. **11** is an exemplary logic/bit path block diagram **1100** of a client computer system, (e.g., **210**), configured with a copyright compliance mechanism (CCM) **300** for preventing unauthorized reproduction of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in any manner similar to that described herein with reference to FIGS. **4**, **5**A-**5**D, **6**A, and **7**A-**7**C, **9**, and **10**.

Diagram **1100** of FIG. **11** includes a media storage device media extraction/creation application **1102** communicatively coupled to operating system input/output subsystem **1104** via wave in line **1121** and wave out line **1138**. Operating system input/output subsystem **1104** is coupled with media storage device class driver **1106** via wave in line **1123** and wave out line **1136**. Media storage device class driver **1106** is coupled with filter driver **1108** via wave in line **1125** and wave out line **1134**. Filter driver **1108** is coupled with media storage device port driver **1110** via wave in line **1127** and wave out line **1132**. Filter driver **1108** is shown to include a switch **1111**, controlled by CCM **300** via coupling **1160**. Media storage device port driver **1110** is coupled with media storage device drive **1112** via wave line in **1129** and wave line out **1130**. Media storage device **999**, shown to include CCM/MSD **900** is receivable by, media storage device drive **1112**. Additionally, CCM **300** is coupled with operating system input/output subsystem **1104** via wave in line **1150** and wave out line **1151**.

In one embodiment, CCM **300** is coupled to and controls selectable switch **1111** in filter driver **1108**. Depending upon the copyright restrictions and/or licensing agreements applicable to a media file disposed on media storage device **999**, CCM **300** controls whether switch **1111** is open (shown), thus preventing the media file from reaching media extraction/creation application **1102**, or closed (not shown) so as to allow reproduction of the protected media file. Media extraction/creation application **1102** can be a "ripping" or "burning" application such as Nero, Roxio, Exact Audio Copy, or other readily available application.

Continuing with FIG. **11**, media storage device **999** is received by media storage device drive **1112**. CCM **300** determines whether media storage device **999** or media disposed thereon is protected by any copyright restrictions and/or licensing agreements, e.g., via detection of a copyright indicator bit. CCM **300** communicates with filter driver **1108** to control switch **1111** accordingly. In the present example, reproducing media storage device **999**, and/or the contents thereon, would violate applicable restrictions and/or agreements and therefore switch **1111** is in an open position such that the output path, (e.g., wave-out line **1138**), to media extraction/creation application **1102** is effectively blocked thereby preventing unauthorized reproduction of media storage device **999**.

It is particularly noted that by virtue of CCM **300** controlling switch **1111**, and therefore controlling wave-out line **1138**, any incoming copyright protected media disposed on a media storage device **999** can be prevented from being reproduced in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media.

Advantageously, as new secure or proprietary file formats are developed, CCM **300** can be readily adapted to be functional therewith. Further, CCM/MSD **900** can prevent users from making unauthorized reproductions of media files, (e.g., recording, copying, ripping, burning, etc.). By using kernel level filter drivers, (e.g., filter driver **1108**), and getting to a low enough level within the operating system (OS) on client system **210**, CCM **300** can detect particular applications and when they request media storage device drive **1112** to poll the media file for copying, ripping, etc., and disable the data input path. CCM **300**, in this embodiment, deals with the input pathway.

In one embodiment, alternative applications that monitor the state of client computer system **210** can enable the autorun functionality of client computer system **210** or alternatively, invoke an automatic mechanism similar to autorun to ensure invocation of CCM **300** for compliance of copyright restrictions and/or licensing agreements applicable to media storage device **999** and/or the copyright protected media disposed thereon.

In one embodiment, CCM **300** can invoke a proprietary media player from media storage device **999**, or activate a proprietary media player resident and operable on client computer system **210**, or an alternative authorized media player resident on client computer system **210**, in a manner similar to that described herein with reference to FIG. **3**.

When media storage device **999** is a multisession device, e.g., a compact disk having a data session and a music session (audio tracks), and it is inserted into or communicatively coupled with media storage device drive **1112** such that its content is accessible, CCM **300** views the contents of the media storage device **999**, and in some operating systems the audio tracks will not be displayed. Instead, the data session is shown, as is an autorun file, (e.g., autorun protocol component **910**), and upon clicking, invokes a player application. CCM **300** can have a data session and files to which a user may not have access unless a player application is invoked.

In one embodiment, the player application could deposit a monitoring portion (e.g., agent program **304**) on client system **210**, which in one embodiment may reside on client computer system **210** subsequent to removal or decoupling of media storage device **999** from media storage device drive **1112**.

By virtue of content in a multisession media storage device **999**, which may not be directly accessible to most player

applications, at some point the player application can be invoked which can then install the CCM **300** into client system **210**, according to one embodiment of the present invention.

In one embodiment, a proprietary media player application is stored on media storage device **999**. However, it may not be automatically invoked. Upon some user intervention, e.g., inserting media storage device **999** into media storage device drive **1112**, the media player application is loaded onto client system **210** which has CCM **300** integrated therewith. Thus, CCM **300** is launched regardless of autorun being activated or de-activated, and mandates the user to utilize the proprietary media player application to experience the content of the media, (e.g., media files) on the media storage device. **999**.

In an alternative embodiment, client computer system **210** has autorun turned off, wherein it is common for the user to be unable to play a media file unless a proprietary media player application is invoked. Activating the proprietary media player application can initiate an installation of those components of CCM **300** that are bypassed when autorun is not active.

Advantageously, by providing a copyright compliance mechanism, (e.g., **300**), which can be easily and readily installed on a client computer system, (e.g., **210**), one or more embodiments of the present invention can be implemented to control access to, the delivery of, and the user's experience with media content subject to copyright restrictions and/or licensing agreements, for example, as defined by the DMCA. Additionally, by closely associating a client computer system, (e.g., **210**), with the user thereof and the media content they received, embodiments of the present invention further can provide for accurate royalty recording.

FIG. **12** is an exemplary logic/bit path block diagram **1200** of a client computer system, (e.g., **210**), configured with a copyright compliance mechanism (CCM) **300** for selectively controlling access to copyrighted media in accordance with an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in a manner similar to that described herein with reference to FIGS. **4**, **5**A-**5**D, **6**A, and **7**A-**7**C, **9**, **10**, and **11**.

Diagram **1200** of FIG. **12** includes a media hardware output device **111** communicatively coupled to operating system multimedia subsystem **1204** via wave in line **1221** and wave out line **1238**. Operating system multimedia subsystem **1204** is coupled with media playback/data extraction application **1206** via wave in line **1223** and wave out line **1236**. Additionally, CCM **300** is coupled with operating system multimedia subsystem **1204** via wave in line **1250** and wave out line **1251**. Media playback/data extraction application **1206** can be a ripping or burning application such as Nero, Roxio, Exact Audio Copy, or other readily available application that allows transformation of the data on media storage device **999**. Media playback/data extraction application **1206** is coupled with filter driver **1208** via wave in line **1225** and wave out line **1234**. Filter driver **1208** is coupled with media storage device class driver **1210** via wave in line **1227** and wave out line **1232**. Filter driver **1208** is shown to include a switch **1211**, controlled by CCM **300** via coupling **1260**.

Media storage device class driver **1210** is coupled with media storage device drive **1212** via wave line in **1229** and wave line out **1230**. Media storage device **999**, shown to include CCM/MSD **900**, is receivable by media storage device drive **1212**. Media player application **1201** is communicatively coupled with media storage device drive **1212** via connection **1205** and is communicatively coupled with CCM **300** via connection **1220**. In the embodiment of FIG. **13**, media storage device drive **1212** is communicatively coupled with media hardware output device **111** via a coupling (e.g., signal path **112** of FIG. **1**). Using signal path **112**, media storage device drive **1212** can output an analog signal directly to media hardware output device **111**. As described herein with reference to FIG. **1**, this allows accessing media disposed on media storage device **999** while bypassing data bus **101** of client computer system **210**.

In one embodiment, CCM **300** is coupled with and controls selectable switch **1211** in filter driver **1208**. Depending upon the copyright restrictions and/or licensing agreements applicable to a media file disposed on media storage device **999**, CCM **300** controls whether switch **1211** is open (shown), thus preventing the media file from reaching media playback/data extraction application **1206**, or closed (not shown) so as to allow reproduction of the protected media file.

Continuing with FIG. **12**, media storage device **999** is received by media storage device drive **1212**. CCM **300** determines whether media storage device **999** or media disposed thereon is protected by any copyright restrictions and/or licensing agreements, e.g., via detection of a copyright indicator bit. In an embodiment of the present invention, an agent program of CCM **300** accesses configuration information contained in a table of contents or other configuration file on media storage device **999**. In an embodiment, this allows individually determining whether the copyright indicator bit is set for each file stored on media storage device **999**. Alternatively, the copyright indicator bit can convey that the content of the entire CD is protected by copyright restrictions and/or licensing agreements. CCM **300** communicates with filter driver **1208** to control switch **1211** accordingly. In the present embodiment, reproducing media storage device **999** or a particular file stored on media storage device **999** would violate applicable restrictions and/or agreements and therefore switch **1211** is in an open position such that the digital data pathway to media playback/data extraction application **111**, (e.g., wave-out line **1238**), is effectively blocked thereby preventing unauthorized access of the protected media file stored on media storage device **999**. As a result, digital access of the media files that have their respective copyright indicator bits set is prevented. In an embodiment, a data access command to operating system multimedia subsystem **1204** triggers CCM **300** of open switch **1211**, thus blocking the digital data pathway of system **1200**. However, commands for controlling media storage device drive (e.g., play, pause, skip, etc.) from media playback application **1201** are allowed to permit accessing audio tracks stored on media storage device **999**. While the present embodiment recites audio information stored upon media storage device **999**, embodiments of the present invention are well suited for protecting other copyright protected media as well such as multimedia presentations as well.

It is particularly noted that by virtue of CCM **300** controlling switch **1211**, and therefore controlling wave-out line **1234**, copyright protected media disposed on a media storage device **999** can be prevented from being digitally accessed in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements by client computer system **210**. However, the copyright protected media can be accessed via signal path **112** and media hardware output device **111**.

As an example, when media storage device **999** is placed into media storage device drive **1212**, the table of contents is read by a monitoring agent (e.g., agent **304** of FIG. **3**). While the present embodiment recites reading the table of contents specifically, embodiments of the present invention are well suited to using other methods to determine whether media

disposed upon media storage device is protected by copyright restrictions and/or licensing agreements. For example, a hidden file on media storage device **999** may convey this information. Alternatively, a separate application disposed on media storage device **999** may convey information regarding copyright restrictions and/or licensing agreements in embodiments of the present invention. In one embodiment, this information is represented as a song or song title to discourage accessing and/or altering this information file. The monitoring agent determines that media storage device has 10 music tracks disposed thereupon and that the copyright indicator bit is set for tracks **1-8**. When media playback application **1201** receives a request to read any of tracks **1-8**, it causes media storage device drive **1212** to access the requested music track. However, CCM **300** opens switch **1211** when the copyright protected tracks are being accessed and thus prevents digitally accessing those tracks by client computer system **210**. The music tracks can still be accessed via signal path **112** and media hardware output device **111**. Thus, a user can listen to and enjoy the copyrighted music tracks, but is prevented from digitally accessing the music. This hinders attempts to reproduce the music tracks in an unauthorized manner while still permitting the user to enjoy the media in accordance with applicable copyright restrictions and/or licensing agreements related to the media. Attempts to create a digital copy of the protected media via media hardware output device **111** can be prevented as described herein with reference to FIGS. **5**A-**5**D. For example, a user may couple signal path **112** with a waveform input of media hardware output device **111** in an attempt to circumvent switch **1211**. However, CCM **300** may open switches **312**, **311**, and/or **511** concurrent with opening switch **1211** to prevent digitally accessing the protected media.

Advantageously, as new secure or proprietary file formats are developed, CCM **300** can be readily adapted to be functional therewith. Further, CCM/MSD **900** can prevent users from making unauthorized reproductions of media files, (e.g., recording, copying, ripping, burning, etc.). By using kernel level filter drivers, (e.g., filter driver **1208**), CCM **300** can detect unauthorized attempts to digitally access copyright protected media, and disable the digital data path.

As described herein with reference to FIG. **11**, alternative applications that monitor the state of client computer system **210** can enable the autorun functionality of client computer system **210** or alternatively, invoke an automatic mechanism similar to autorun to ensure invocation of CCM **300** for compliance of copyright restrictions and/or licensing agreements applicable to media storage device **999** and/or the copyright protected media disposed thereon.

In one embodiment, CCM **300** can invoke a proprietary media player from media storage device **999**, or activate a proprietary media player resident and operable on client computer system **210**, or an alternative authorized media player resident on client computer system **210**, as described herein with reference to FIG. **3**.

For example, when media storage device **999** is a multisession device, e.g., a compact disk having a data session and a music session (e.g., audio tracks), and it is inserted into media storage device drive **1212**, CCM **300** looks at the contents of the media storage device **999**, and in some operating systems the audio tracks will not be displayed. Instead, the data session is shown, as is an autorun file, (e.g., autorun protocol component **910**), and upon clicking an icon, invokes a player application. CCM **300** can have a data session and files to which a user may not have access unless a player application is invoked.

In one embodiment, the player application could deposit a monitoring portion (e.g., agent program **304**) on client system **210**, which in one embodiment may reside on client computer system **210** subsequent to removal of media storage device **999** from media storage device drive **1212**.

By virtue of content in a multisession media storage device **999**, which may not be directly accessible to most player applications, at some point the player application will be invoked which can then install the CCM **300** into client system **210**, according to one embodiment of the present invention.

In one embodiment, a proprietary media player application is stored on media storage device **999**. However, it is not automatically invoked. Upon some user intervention, e.g., inserting media storage device **999** into media storage device drive **1212**, the media player application is loaded onto client system **210** which has CCM **300** integrated therewith. Thus, CCM **300** is launched regardless of autorun being activated or not activated, and mandates the user to utilize the proprietary media player application to experience the content of the media files on the media storage device. **999**.

In an alternative embodiment, client computer system **210** has autorun off, wherein it is common for the user to be unable to play a media file unless a proprietary media player application is invoked. Activating the proprietary media player application can initiate an installation of those components of CCM **300** that are bypassed when autorun is not active.

Advantageously, by providing a copyright compliance mechanism, e.g., **300**, which can be easily and readily installed on a client computer system, (e.g., **210**), embodiments of the present invention can be implemented to control access to, the delivery of, and the user's experience with media content subject to copyright restrictions and/or licensing agreements, for example, as defined by the DMCA. Additionally, by closely associating a client computer system, e.g., **210**, with the user thereof and the media content they receive, embodiments of the present invention further provide for accurate royalty recording.

FIG. **13** is a block diagram of a communicative environment **1300** for identifying media in accordance with embodiments of the present invention. Included in communicative environment **1300** is a media storage device drive **1112** coupled with a client computer system **210** via a data/address bus **110**. A media identification module **1310** is disposed on client computer system **210**. Client computer system **210** is further coupled with media identification service **1320** and/or media provider **1330** via Internet **201**.

In embodiments of the present invention, a media identification module **1310** is used to identify the media files disposed on media storage device **999**. Currently, many CDs do not contain descriptive information, e.g., song titles, artist and album names, etc. As a result, when accessing the tracks on the CD the playback device only identifies a track number, e.g., "Disk 1, Track 1." However, there are services available via the Internet which allow a user to identify and/or manage their media files. One such service is the Gracenote CDDB® Music Recognition Service^{SM}. Using the Gracenote service, a user inserts a music CD into their computer and uses a software application to contact the Gracenote database server which then identifies the artist, title, tracklist, and other information about the CD and displays the information on the user's computer.

In one embodiment, media identification module **1310** sends data to media identification service **1320** such as the number of songs on media storage device **999**, the length of each of those songs, and the order in which they are accessed. Using this information, media identification service **1320**

performs a database search until it finds media release (e.g., an album) having similar characteristics. Upon finding a match, media identification service **1320** can identify the album, artist, playlist, and other information applicable to media storage device **999** and send that information to client computer system **210**. A similar public domain service can be accessed at the following web address: http://www.freedb.org.

In an embodiment of the present information, client computer system **210** then contacts media provider **1330** to determine whether any of the tracks disposed upon media storage device **999** are copyright protected material. Using the information provided by media information service **1320**, media provider **1330** can identify which of the tracks disposed upon media storage device **999** are copyright protected material and send this information back to client computer system **210**. Using the information, provided by media provider **1330**, CCM **300** can selectively allow access to tracks on media storage device **999**, either allowing/denying digital access to media storage device **999** as a whole, or on a track-by-track basis. Additionally, a user can be permitted to make a given number of copies of the media disposed upon media storage device **999**, or may be permitted to access the copyright protected material for a given period of time in accordance with an end user agreement. In another embodiment, the database of media identification service **1320** may also provide copyright information about the tracks disposed upon media storage device **999** to client computer system **210**.

In another embodiment, media identification module **1310** sends waveform data and/or text data to media identification service **1320** to identify the media disposed upon media storage device **999**. For example, the Gracenote MusicID^{SM} service uses waveform analysis to identify music tracks for service subscribers. In an embodiment of the present invention, music identification module **1310** sends waveform data of tracks being accessed from media storage device **999** to media identification service **1320**. In one embodiment, this waveform data is captured by a sampling buffer (not shown) that is in the data path between, for example, media storage device drive **1212** and media storage device class driver **1210** of FIG. **12**. While the present embodiment describes placing the sampling buffer in this portion of the data path, embodiments of the present invention are well suited for placing the sampling buffer in another portion of the data path as well, e.g., between media storage device class driver **1210** and filter driver **1208** of FIG. **12**. The Gracenote MusicID^{SM} service also uses text-based recognition in conjunction with the waveform analysis to provide a higher degree of certainty in identifying the music tracks. Upon identifying the media disposed upon media storage device **999**, media identification module **1310** can contact media provider **1330** to determine whether any of the media is copyright protected material. Alternatively, the waveform and/or text data may be sent directly to media provider **1330** to determine whether any of the tracks disposed upon media storage device **999** are copyright protected material.

In one embodiment, media identification module **1310** samples the data as it passes through the sample buffer and creates an abstraction of the data which is sent to media identification service **1320** or media provider **1330**. Media identification module **1310** then performs a fast Fourier transform of the sampled data and sends the result to either media identification service **1320** or media provider **1330** to identify the media disposed upon media storage device **999**. While the present embodiment recites performing a fast Fourier transform of the sampled data, embodiments of the present invention are well suited for performing other transformations of the sampled data before sending it to media identification service **1320** or media provider **1330**.

In one embodiment, media identification module **1310** is disposed upon media storage device **999**. In one embodiment, the installation of media identification module **1310** onto client computer system **210** is performed clandestine with respect to the user and is initiated by inserting media storage device **999** into an appropriate media storage device drive, e.g. a magnetic/optical disk drive or alternative device drive coupled with client system **210**.

The foregoing disclosure regarding specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and many modifications and variations are possible in light of above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, to thereby enable others skilled in the art to best utilize the invention and various embodiments with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the Claims appended hereto and their equivalents.

What is claimed is:

1. A method for selectively controlling access to media disposed on a media storage device, said method comprising:
- installing a compliance mechanism on a computer system, said compliance mechanism communicatively coupled with said computer system when installed thereon, said compliance mechanism for enforcing compliance with a usage restriction applicable to said media;
- obtaining control of a data pathway operable on said computer system;
- accessing data disposed on said media storage device to determine said usage restriction;
- selectively preventing said computer system from digitally accessing said media via said data pathway while enabling presentation of the media; and
- presenting said media using an analog sound rendering device communicatively coupled with said device drive via an analog signal path.

2. The method as recited in claim **1** wherein said usage restriction comprises a copyright restriction or a licensing agreement associated with said media.

3. The method as recited in claim **1** further comprising:
- installing a filter driver on said computer system, said filter driver configured to be coupled with and operable in conjunction with said compliance mechanism and for controlling said data pathway.

4. The method as recited in claim **3** wherein said filter driver prevents digitally accessing said media.

5. The method as recited in claim **1** further comprising:
- activating an autorun mechanism disposed on said media storage device in response to a device drive coupled with said computer system receiving said media storage device, said autorun mechanism for initiating said installing said compliance mechanism on said computer system.

6. The method as recited in claim **5** wherein said autorun mechanism is activated in response to detection of a usage restriction indicator disposed on said media storage device, subsequent to said device drive receiving said media storage device.

7. The method as recited in claim **5** wherein said autorun mechanism is activated in response to detection of a selection of an icon representing said media.

8. The method as recited in claim 1 further comprising:

bypassing said installing said compliance mechanism on said computer system if an instance of said compliance mechanism is predisposed on said computer system.

9. The method as recited in claim 1 further comprising:

initiating a communication session between said computer system and a network to which said computer system is coupled and from which said compliance mechanism is available;

comparing said compliance mechanism present on said computer system and said compliance mechanism available from said network; and

updating said compliance mechanism on said computer system.

10. The method as recited in claim 1 further comprising:

deactivating said compliance mechanism upon detection of uncoupling of said media storage device from said computer system.

11. The method as recited in claim 1 further comprising:

uninstalling said compliance mechanism upon detection of uncoupling of said media storage device from said computer system.

12. The method as recited in claim 1 wherein said media storage device upon which said media is disposed is from a group of media storage devices consisting of a compact disk (CD), a mini CD, a digital versatile disk (DVD), a mini DVD, a compact flash card, a secure digital (SD) card, a memory stick, a digital audio tape (DAT), a digital video tape (DVT), a holographic storage object, a magneto-optical disk, a multi-layer fluorescent disk, an optical disk, and a magnetic disk.

13. The method as recited in claim 1 further comprising:

installing a media identification mechanism on said computer system;

utilizing said media identification mechanism to identify an instance of media disposed on said media storage device;

determining a usage restriction applicable to said instance of media; and

using said compliance mechanism to selectively control digitally accessing said instance of media based upon said determining.

14. The method as recited in claim 13 further comprising:

activating an autorun mechanism disposed on said media storage device in response to a device drive coupled with said computer system receiving said media storage device, said autorun mechanism for initiating installing said media identification mechanism on said computer system.

15. A system for selectively controlling access to media on a media storage device, said system comprising:

a compliance mechanism disposed on said media storage device and configured to be installed on and communicatively coupled with a computer system, said compliance mechanism for enforcing compliance with a usage restriction applicable to said media;

a device drive coupled with said computer system for accessing said media storage device, said device drive communicatively coupled with an analog sound rendering device of said computer system; and

wherein said compliance mechanism is configured to selectively prevent access to said media via a digital data pathway of said computer system while presenting said media via said analog sound rendering device.

16. The system of claim 15 wherein said compliance mechanism further comprises a filter driver configured to be coupled with said compliance mechanism and said digital data pathway, said filter driver for controlling said digital data pathway.

17. The system of claim 15 wherein said compliance mechanism is configured to initiate a communication session between said computer system and a network to which said computer system is coupled and from which a second compliance mechanism is available.

18. The system of claim 17 wherein said compliance mechanism is configured to compare said compliance mechanism on said computer system with said second compliance mechanism and to update said compliance mechanism on said computer system.

19. The system of claim 15 further comprising:

an autorun protocol disposed on said media storage device configured to initiate installation of said compliance mechanism and a presentation mechanism on said computer system in response to said device drive receiving said media storage device.

20. The system of claim 19 wherein said autorun protocol is configured to initiate installation of said compliance mechanism in response to detection of a usage restriction indicator disposed on said media storage device subsequent to said device drive receiving said media storage device.

21. The system of claim 19 wherein said autorun protocol is configured to initiate installation of said compliance mechanism in response to detection of a selection of an icon representing said media.

22. The system of claim 19 wherein said autorun protocol is configured to bypass said installation upon detection of an instance of said compliance mechanism present on said computer system.

23. The system of claim 19 wherein said presentation mechanism is configured to present said media in accordance with said compliance mechanism.

24. The system of claim 15 wherein said usage restriction comprises a copyright restriction or licensing agreement applicable to said media.

25. The system of claim 15 wherein said compliance mechanism is configured to be deactivated upon detection of uncoupling of said media storage device from said computer system.

26. The system of claim 15 wherein said compliance mechanism is configured to be uninstalled upon detection of uncoupling of said media storage device from said computer system.

27. The system of claim 15 wherein said media storage device upon which said media is disposed is from a group of media storage devices, said group consisting of a compact disk (CD), a mini CD, a digital versatile disk (DVD), a mini DVD, a compact flash card, a secure digital (SD) card, a memory stick, a digital audio tape (DAT), a digital video tape (DVT), a holographic storage object, a magneto-optical disk, a multi-layer fluorescent disk, an optical disk, and a magnetic disk.

28. The method as recited in claim 15 further comprising:

a media identification mechanism installed on said computer system and communicatively coupled with said usage compliance mechanism, said media identification mechanism for identifying an instance of media disposed on said media storage device to determine said usage restriction applicable to said instance of media.

29. The method as recited in claim 28 further comprising:

an autorun protocol disposed on said media storage device configured to initiate installation of said media identification mechanism on said computer system in response to said device drive receiving said media storage device.

30. A non-transitory computer readable medium for storing computer implementable instructions for causing a computer system to perform a method of selectively controlling access to media on a media storage device, said method comprising:

invoking an autorun protocol disposed on said media storage device in response to a device drive coupled with said computer system receiving said media storage device, said autorun protocol for installing a compliance mechanism on said computer system;

installing said compliance mechanism on said computer system, said compliance mechanism communicatively coupled with said computer system when installed thereon, said compliance mechanism for providing compliance with a usage restriction associated with said media;

acquiring control of a digital data pathway of said computer system with a filter driver coupled with said compliance mechanism and with said computer system, said filter driver installed during said installing of said compliance mechanism; and

selectively restricting said media on said media storage device from being accessed via said digital data pathway while enabling presentation of said media using an analog sound rendering device communicatively coupled with said device drive.

31. The non-transitory computer readable medium of claim 30 wherein said method further comprises:

bypassing said installing said compliance mechanism on said computer system if a copy of said compliance mechanism is predisposed thereon.

32. The non-transitory computer readable medium of claim 30 wherein said method further comprises:

commencing a communication session between said computer system and a network to which said computer system is coupled and from which a version of said compliance mechanism is available.

33. The non-transitory computer readable medium of claim 32 wherein said method further comprises:

updating said compliance mechanism on said computer system.

34. The non-transitory computer readable medium of claim 33 wherein said method further comprises:

activating a presentation mechanism coupled with said computer system for presenting said media, said presentation mechanism authorized to present said media in accordance with said compliance mechanism.

35. The non-transitory computer readable medium of claim 33 wherein said method further comprises:

installing a presentation mechanism on said computer system to enable said computer system to present said media, said presentation mechanism authorized to present said media in accordance with said compliance mechanism.

36. The non-transitory computer readable medium of claim 30 wherein said autorun protocol is invoked in response to detection of a usage restriction indicator disposed on said media storage device, subsequent to said device drive receiving said media storage device.

37. The non-transitory computer readable medium of claim 30 wherein said autorun protocol is invoked in response to detection of a selection of an icon representing said media.

38. The non-transitory computer readable medium of claim 30 wherein said usage restriction comprises a copyright restriction or licensing agreement applicable to said media.

39. The non-transitory computer readable medium of claim 30 wherein said method further comprises:

deactivating said compliance mechanism upon detection of uncoupling of said media storage device from said device drive.

40. The non-transitory computer readable medium of claim 30 wherein said method further comprises:

uninstalling said compliance mechanism upon detection of uncoupling of said media storage device from said device drive.

41. The non-transitory computer readable medium of claim 30 wherein said media storage device upon which said media is disposed is from a group of media storage devices, said group consisting of a compact disk (CD), a mini CD, a digital versatile disk (DVD), a mini DVD, a compact flash card, a secure digital (SD) card, a memory stick, a digital audio tape (DAT), a digital video tape (DVT), a holographic storage object, a magneto-optical disk, a multi-layer fluorescent disk, an optical disk, and a magnetic disk.

42. The non-transitory computer readable medium of claim 30 wherein said method further comprises:

installing a media identification mechanism on said computer system;

utilizing said media identification mechanism to identify an instance of media disposed on said media storage device;

determining a usage restriction applicable to said instance of media; and

using said compliance mechanism to selectively control digitally accessing said instance of media based upon said determining.

43. The non-transitory computer readable medium of claim 42 wherein said method further comprises:

activating said autorun protocol disposed on said media storage device in response to said device drive receiving said media storage device, said autorun mechanism for initiating installing said media identification mechanism on said computer system.

* * * * *

EXHIBIT D

US008132263B2

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Risan et al.

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(54) **METHOD AND SYSTEM FOR SELECTIVELY CONTROLLING ACCESS TO PROTECTED MEDIA ON A MEDIA STORAGE DEVICE**

(75) Inventors: **Hank Risan**, Santa Cruz, CA (US); **Edward Vincent Fitzgerald**, Santa Cruz, CA (US)

(73) Assignee: **Music Public Broadcasting, Inc.**, Santa Cruz, CA (US)

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See application file for complete search history.

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Primary Examiner — Beemnet Dada

(57) **ABSTRACT**

A method of preventing unauthorized reproduction of media disposed on a media storage device according to one embodiment is described. The method comprises installing a compliance mechanism on the computer system. The compliance mechanism is communicatively coupled with the computer system when installed thereon. The compliance mechanism is for enforcing compliance with a usage restriction applicable to the media. The method further includes obtaining control of a data input pathway operable on the computer system. The method further includes accessing data that is disposed on the media storage device that is associated with the usage restriction. The method further includes preventing the computer system from accessing the media digitally via the data pathway while enabling presentation of the protected media.

15 Claims, 18 Drawing Sheets

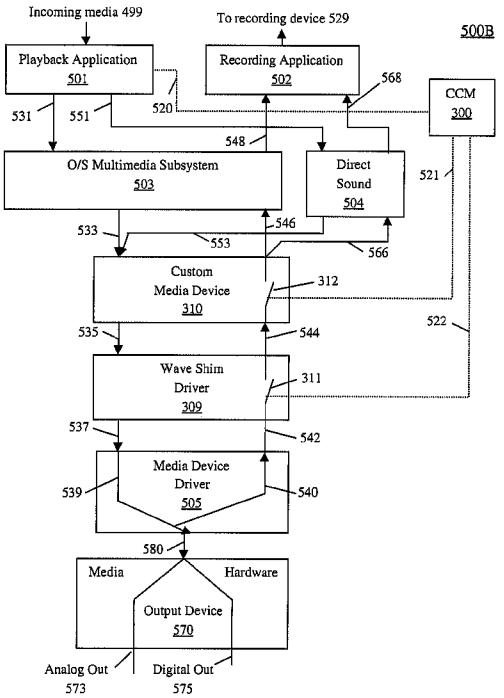
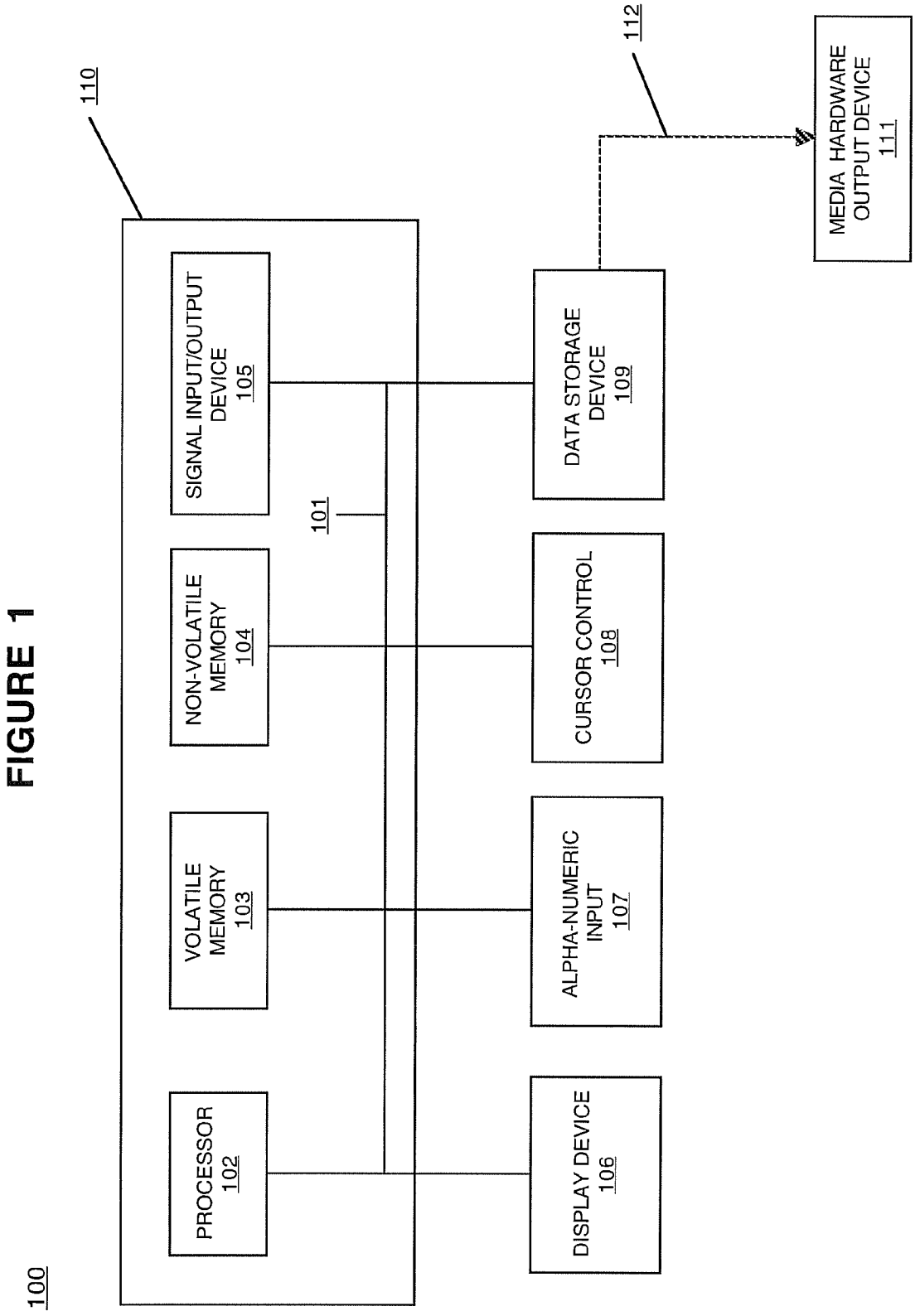


FIGURE 1


100
110
112
101
SIGNAL INPUT/OUTPUT DEVICE 105
NON-VOLATILE MEMORY 104
VOLATILE MEMORY 103
PROCESSOR 102
DATA STORAGE DEVICE 109
CURSOR CONTROL 108
ALPHA-NUMERIC INPUT 107
DISPLAY DEVICE 106
MEDIA HARDWARE OUTPUT DEVICE 111

200

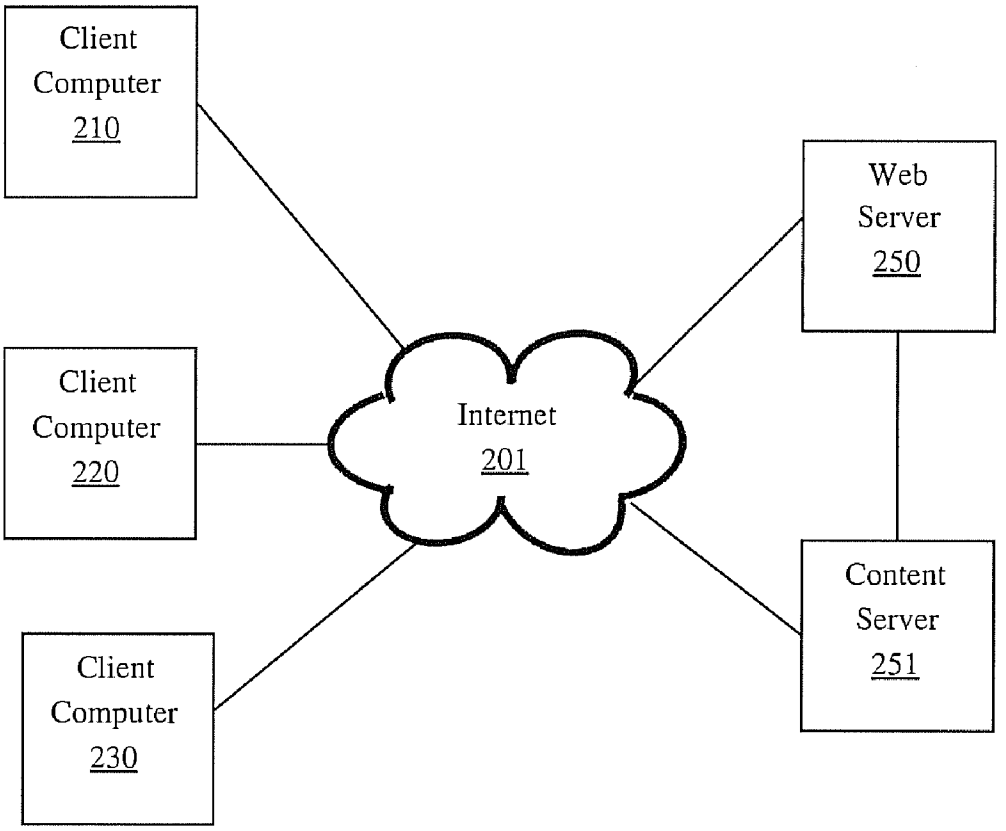

Client Computer 210
Client Computer 220
Client Computer 230
Internet 201
Web Server 250
Content Server 251

FIGURE 2

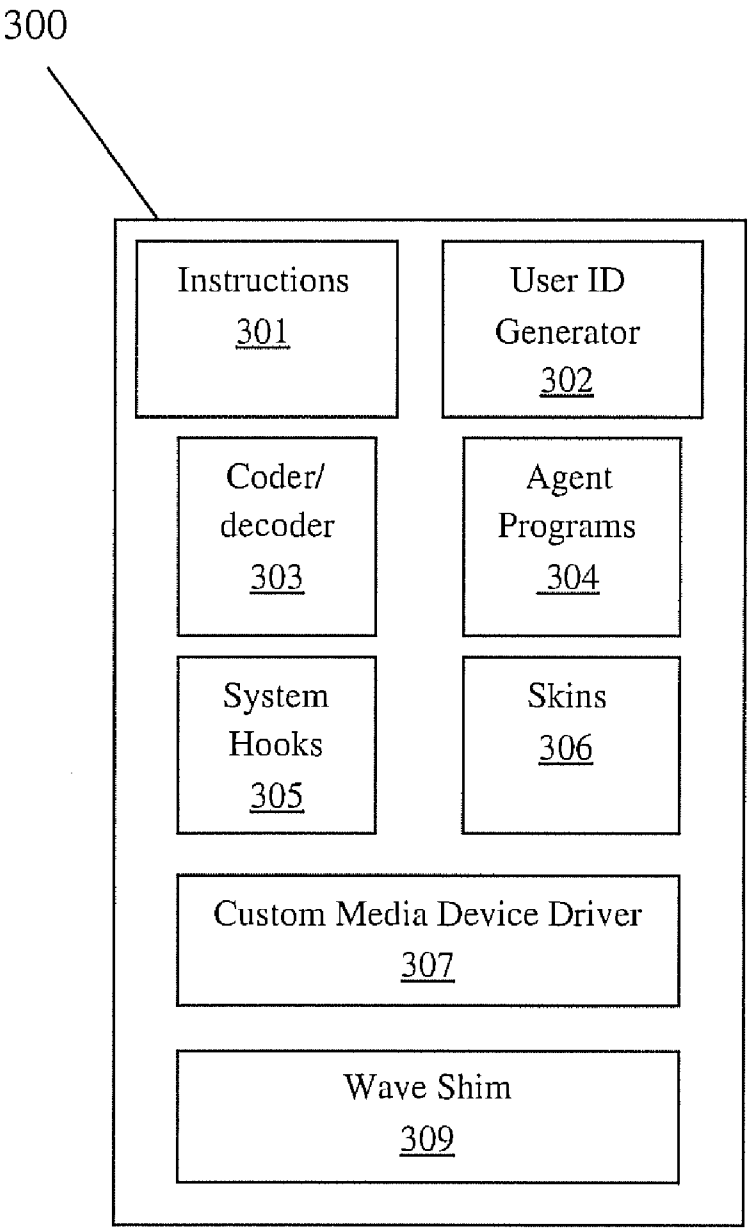

300
Instructions
301
User ID
Generator
302
Coder/
decoder
303
Agent
Programs
304
System
Hooks
305
Skins
306
Custom Media Device Driver
307
Wave Shim
309

FIGURE 3

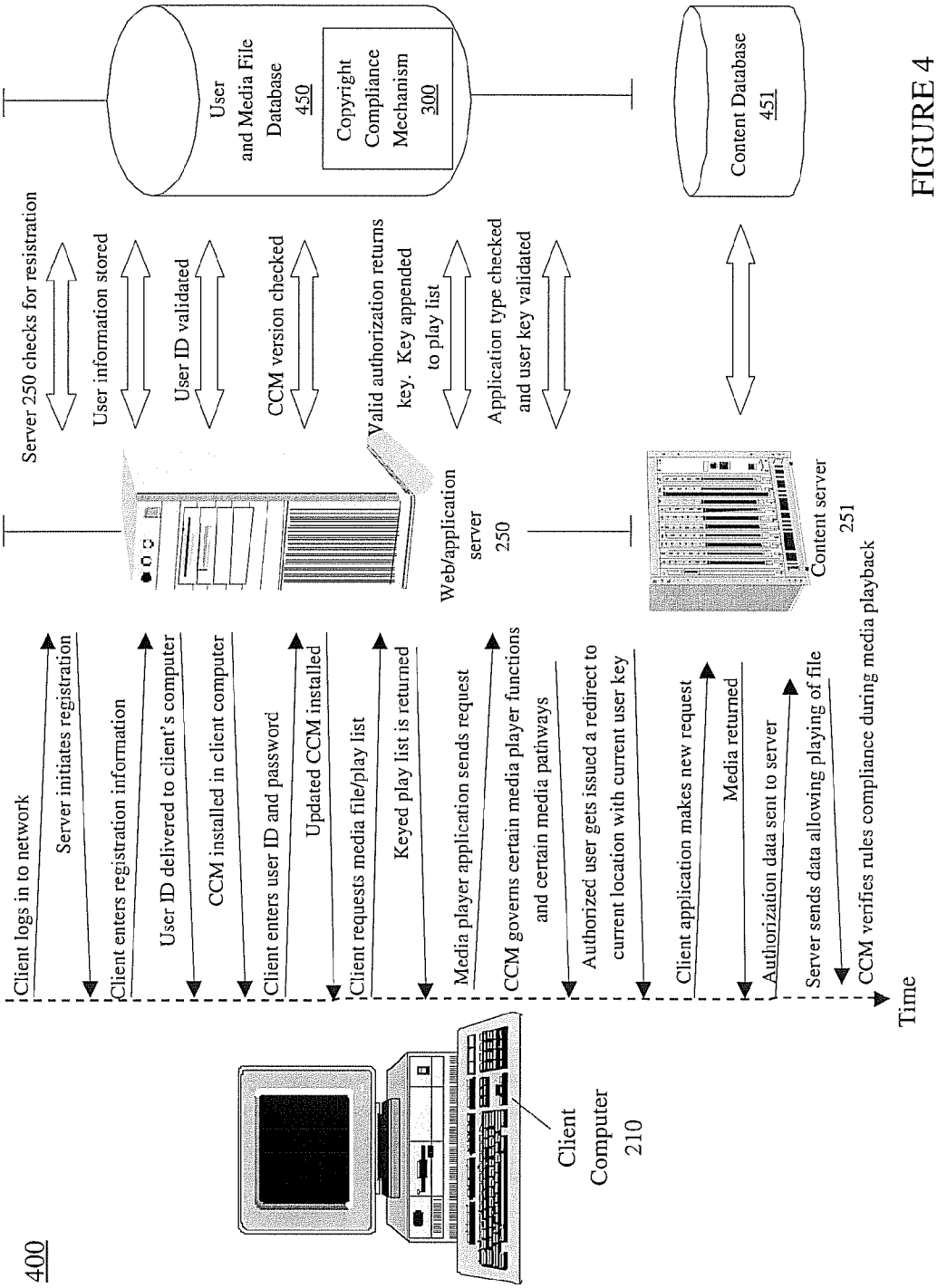

400
Client Computer 210
Time
Client logs in to network
Server initiates registration
Client enters registration information
User ID delivered to client's computer
CCM installed in client computer
Client enters user ID and password
Updated CCM installed
Client requests media file/play list
Keyed play list is returned
Media player application sends request
CCM governs certain media player functions and certain media pathways
Authorized user gets issued a redirect to current location with current user key
Client application makes new request
Media returned
Authorization data sent to server
Server sends data allowing playing of file
CCM verifies rules compliance during media playback
Web/application server 250
Content server 251
Server 250 checks for resistration
User information stored
User ID validated
CCM version checked
Valid authorization returns key. Key appended to play list
Application type checked and user key validated
User and Media File Database 450
Copyright Compliance Mechanism 300
Content Database 451

FIGURE 4

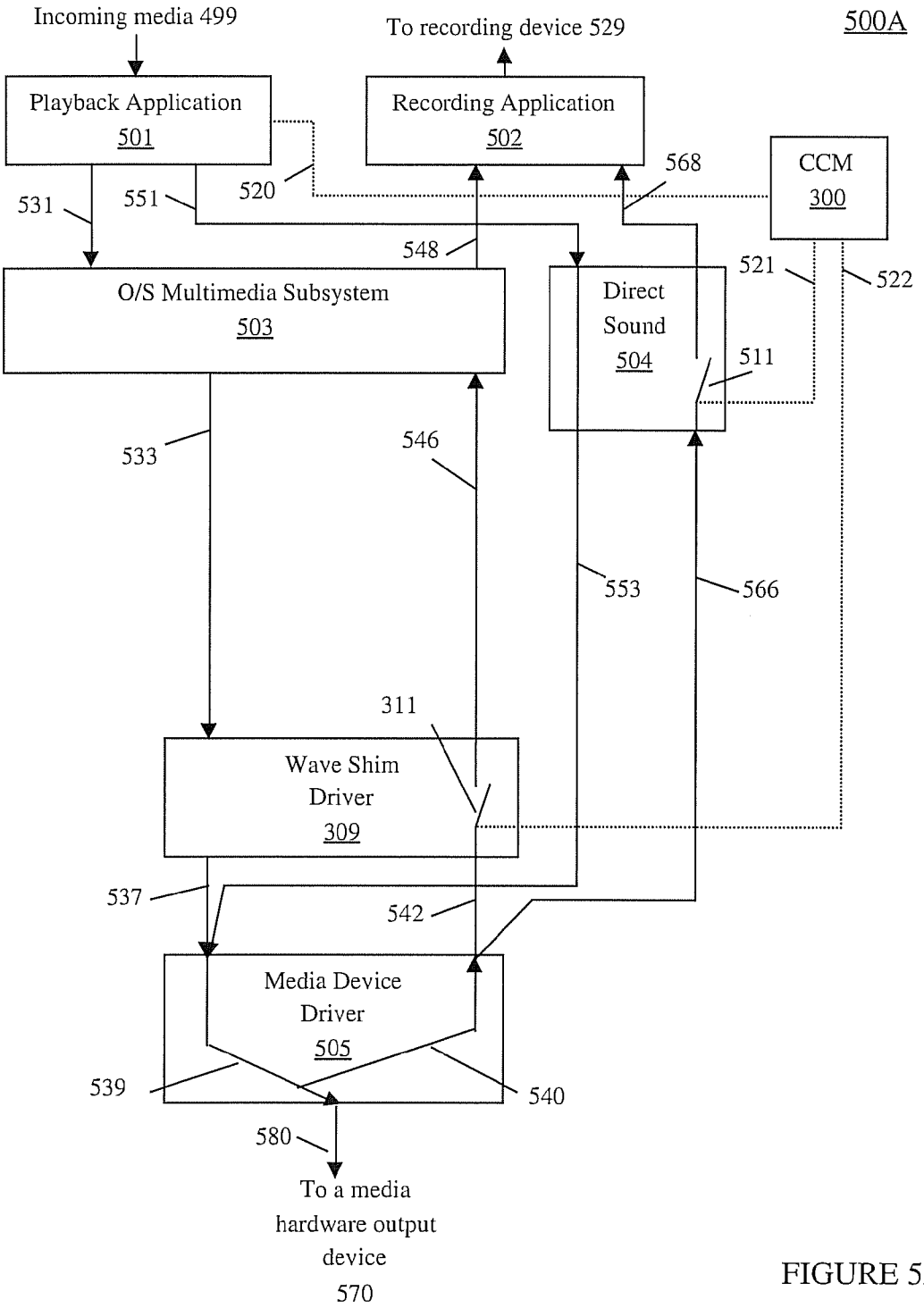

Incoming media 499
To recording device 529
500A
Playback Application
501
Recording Application
502
CCM
300
568
520
531
551
548
521
522
O/S Multimedia Subsystem
503
Direct
Sound
504
511
533
546
553
566
311
Wave Shim
Driver
309
537
542
Media Device
Driver
505
539
540
580
To a media
hardware output
device
570

FIGURE 5A

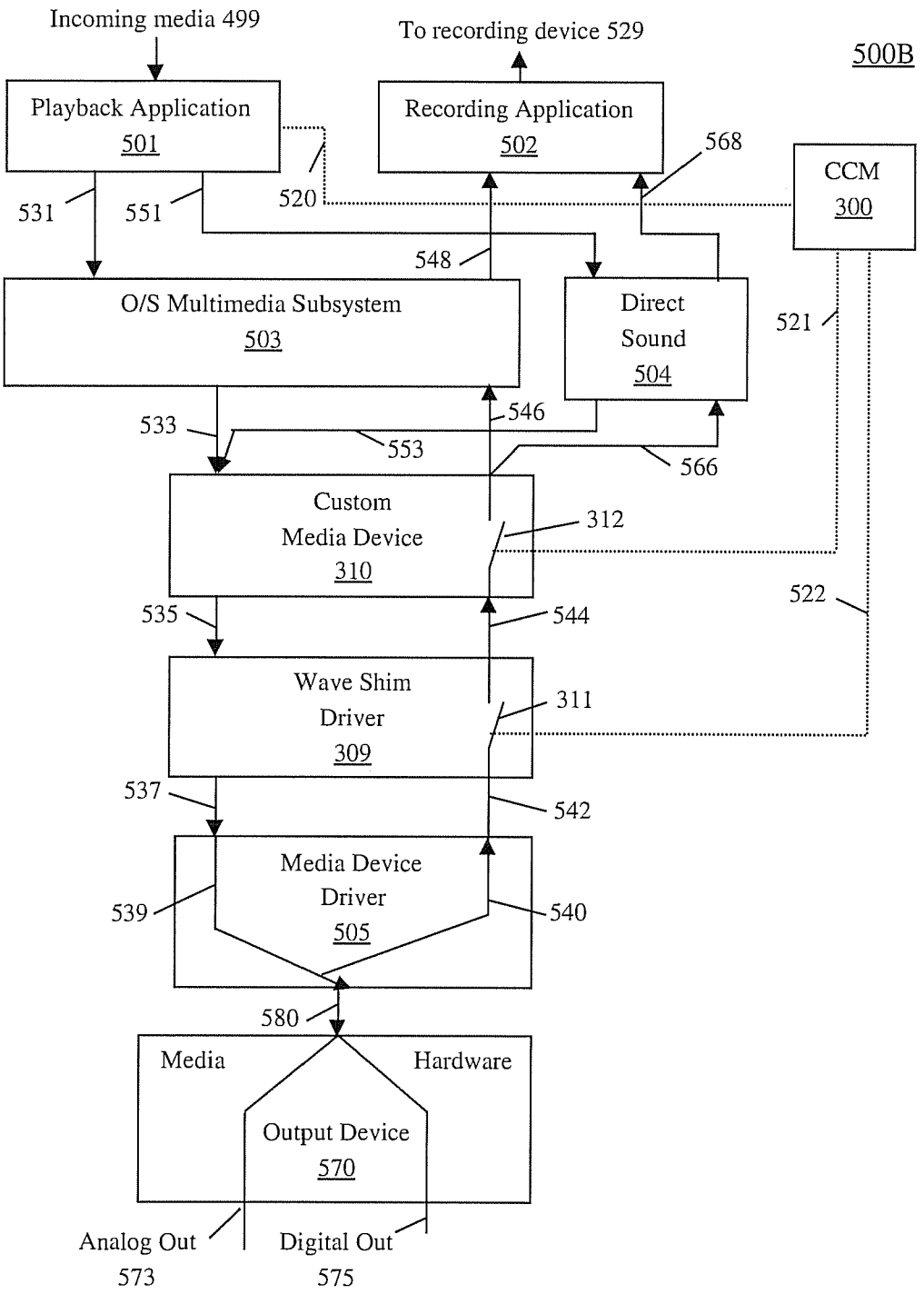

Incoming media 499
To recording device 529
500B
Playback Application
501
Recording Application
502
568
CCM
300
531
551
520
548
O/S Multimedia Subsystem
503
Direct
Sound
504
521
533
546
553
566
Custom
Media Device
310
312
522
535
544
Wave Shim
Driver
309
311
537
542
Media Device
Driver
505
539
540
580
Media
Hardware
Output Device
570
Analog Out
573
Digital Out
575

FIGURE 5B

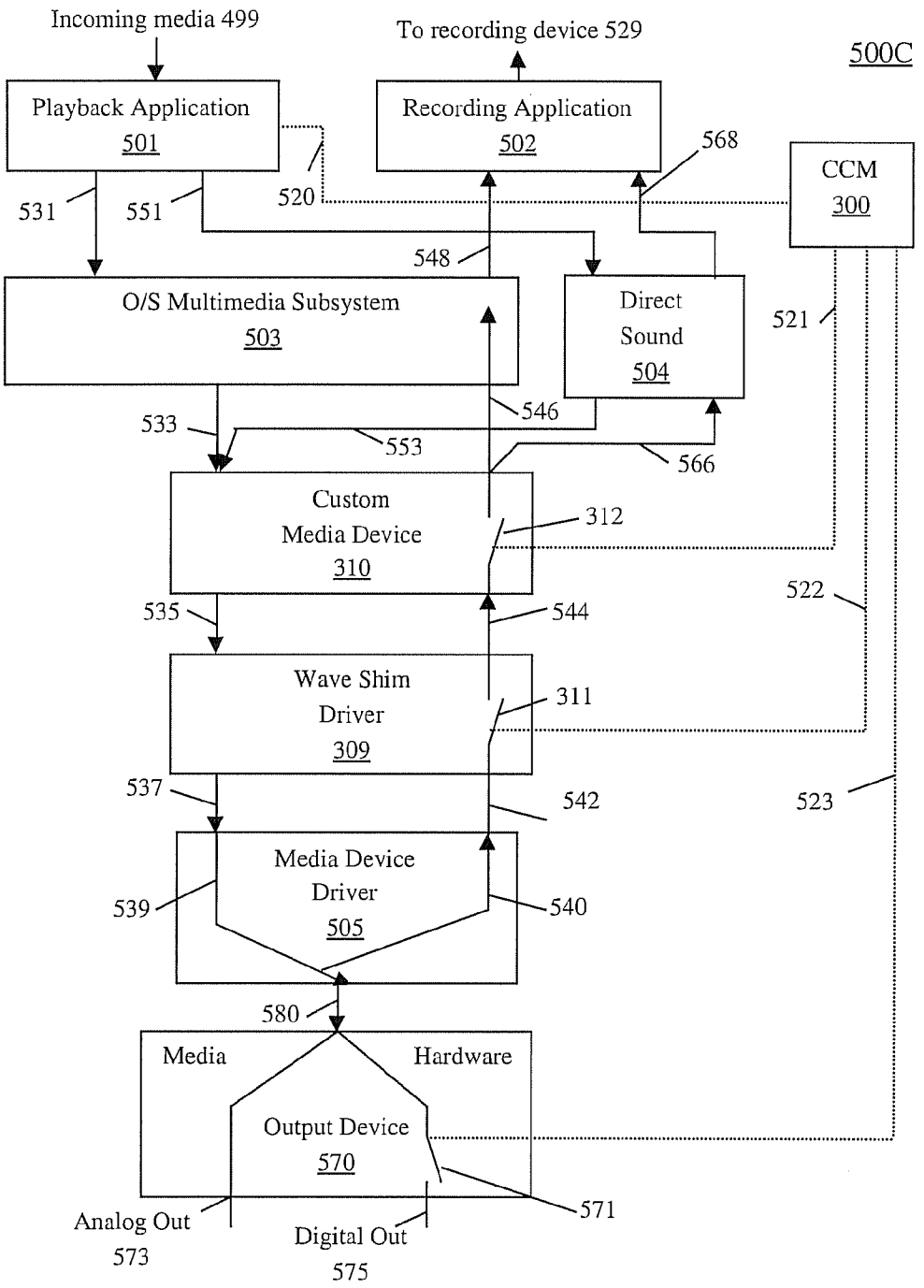

Incoming media 499
To recording device 529
500C
Playback Application
501
Recording Application
502
568
CCM
300
520
531
551
548
O/S Multimedia Subsystem
503
Direct
Sound
504
521
546
533
553
566
Custom
Media Device
310
312
522
535
544
Wave Shim
Driver
309
311
537
542
523
Media Device
Driver
505
539
540
580
Media
Hardware
Output Device
570
571
Analog Out
573
Digital Out
575

FIGURE 5C

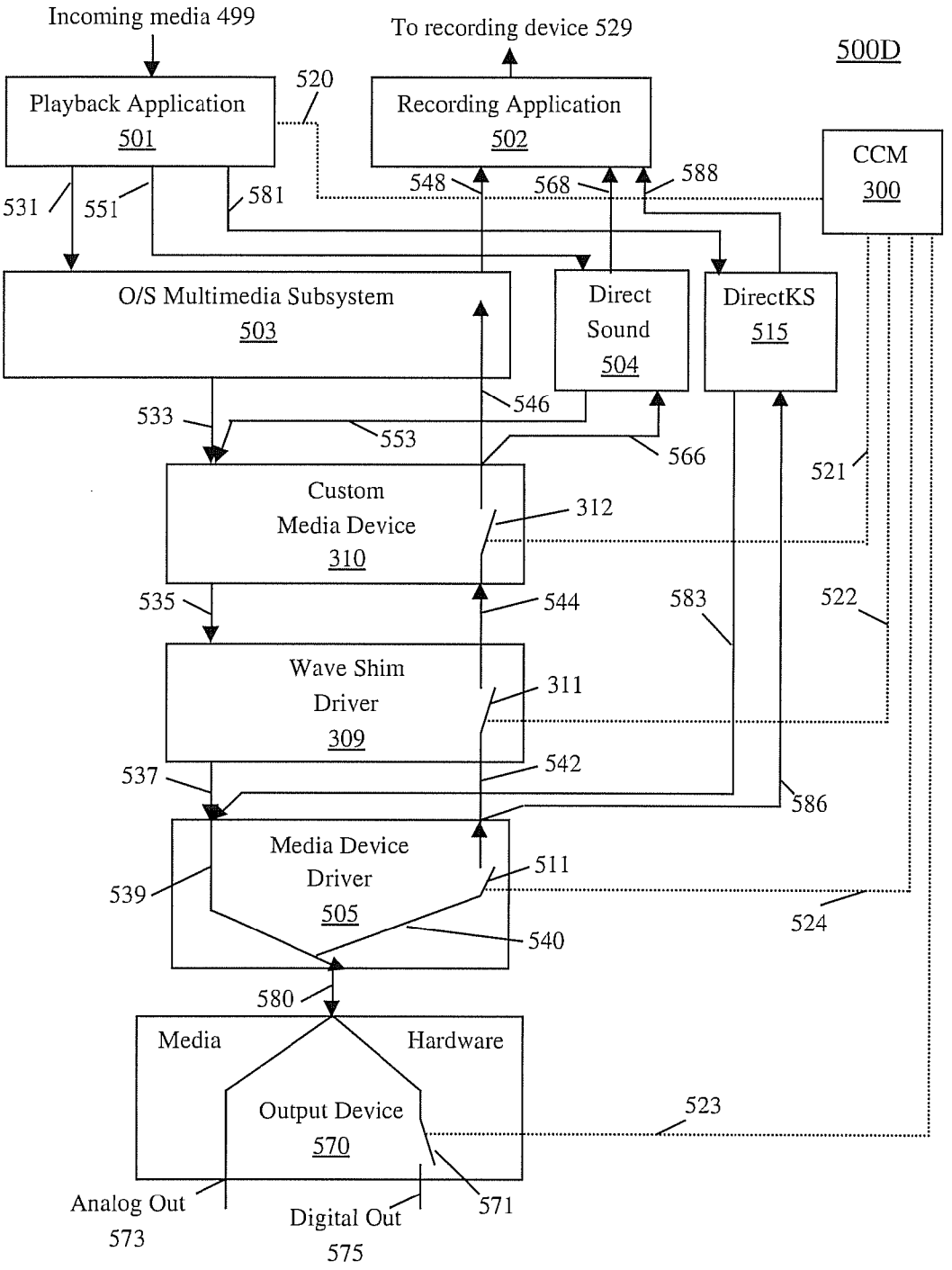

Incoming media 499
To recording device 529
500D
Playback Application
501
520
Recording Application
502
CCM
300
531
551
581
548
568
588
O/S Multimedia Subsystem
503
Direct
Sound
504
DirectKS
515
533
553
546
566
521
Custom
Media Device
310
312
535
544
583
522
Wave Shim
Driver
309
311
537
542
586
Media Device
Driver
505
511
539
540
524
580
Media
Hardware
Output Device
570
523
Analog Out
573
Digital Out
575
571

FIGURE 5D

600

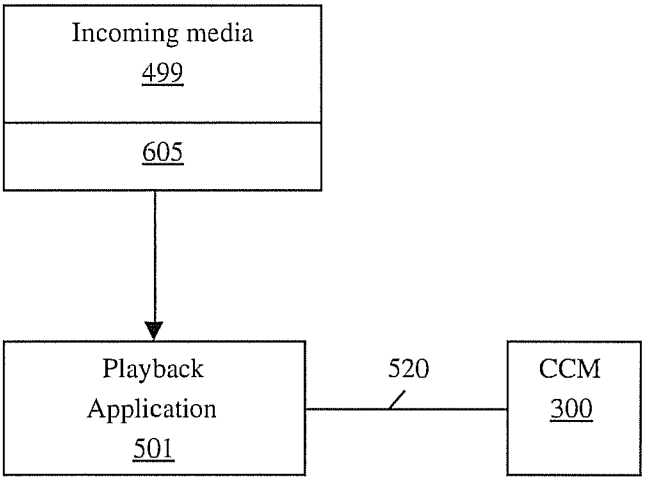


FIGURE 6A

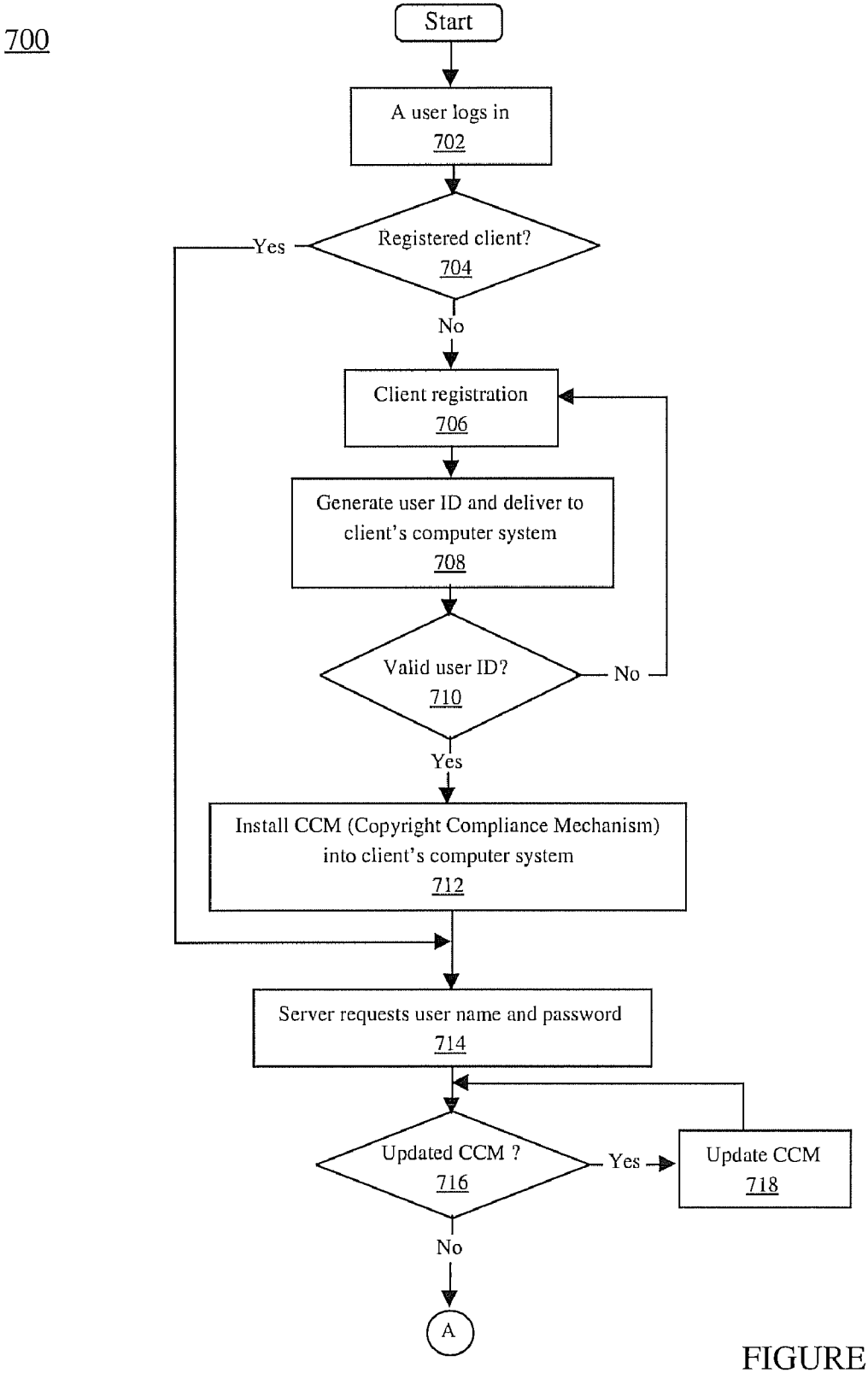

700
Start
A user logs in
702
Registered client?
704
Yes
No
Client registration
706
Generate user ID and deliver to client's computer system
708
Valid user ID?
710
No
Yes
Install CCM (Copyright Compliance Mechanism) into client's computer system
712
Server requests user name and password
714
Updated CCM ?
716
Yes
Update CCM
718
No
A

FIGURE 7A

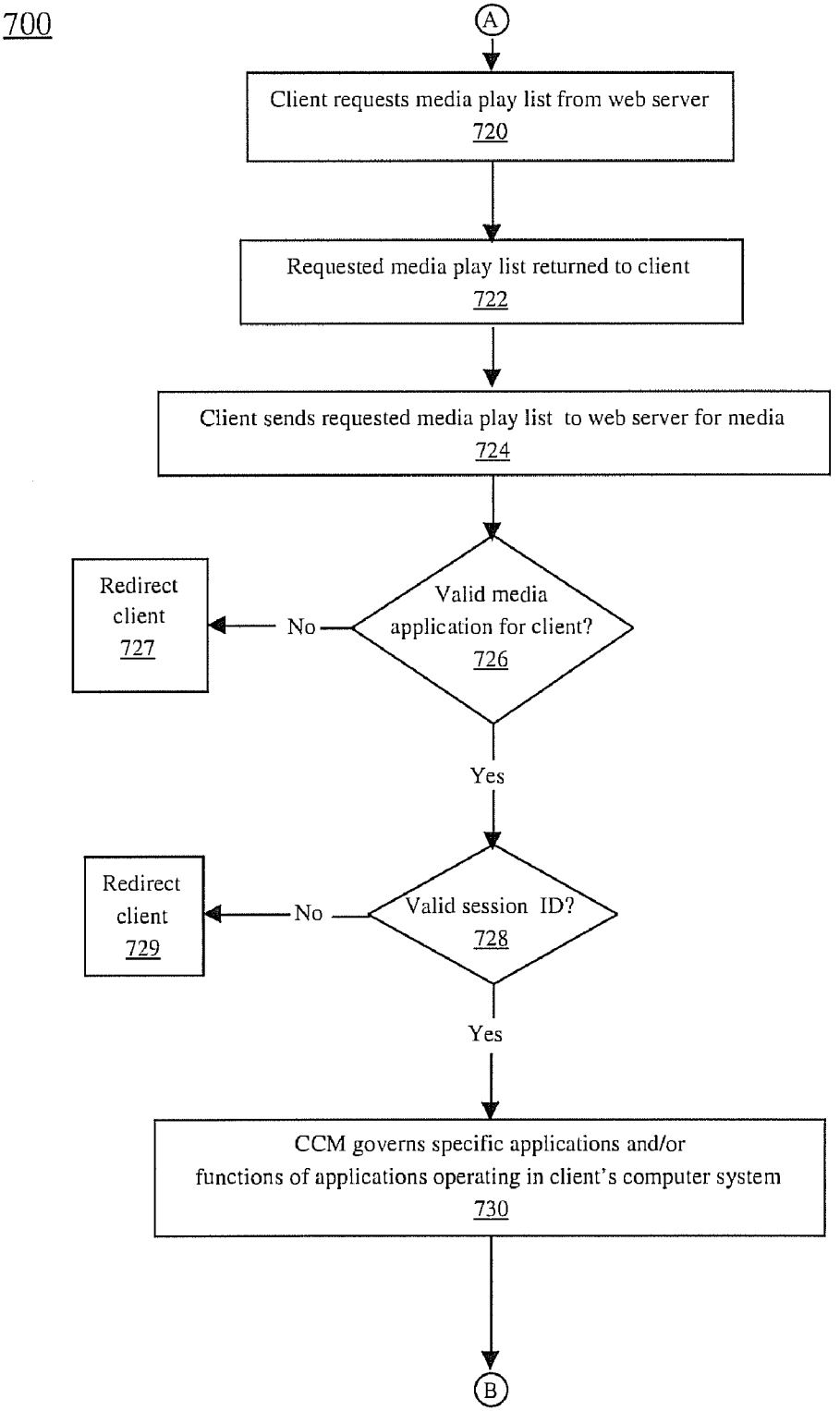

700
A
Client requests media play list from web server
720
Requested media play list returned to client
722
Client sends requested media play list to web server for media
724
Valid media application for client?
726
No
Redirect client
727
Yes
Valid session ID?
728
No
Redirect client
729
Yes
CCM governs specific applications and/or functions of applications operating in client's computer system
730
B

FIGURE 7B

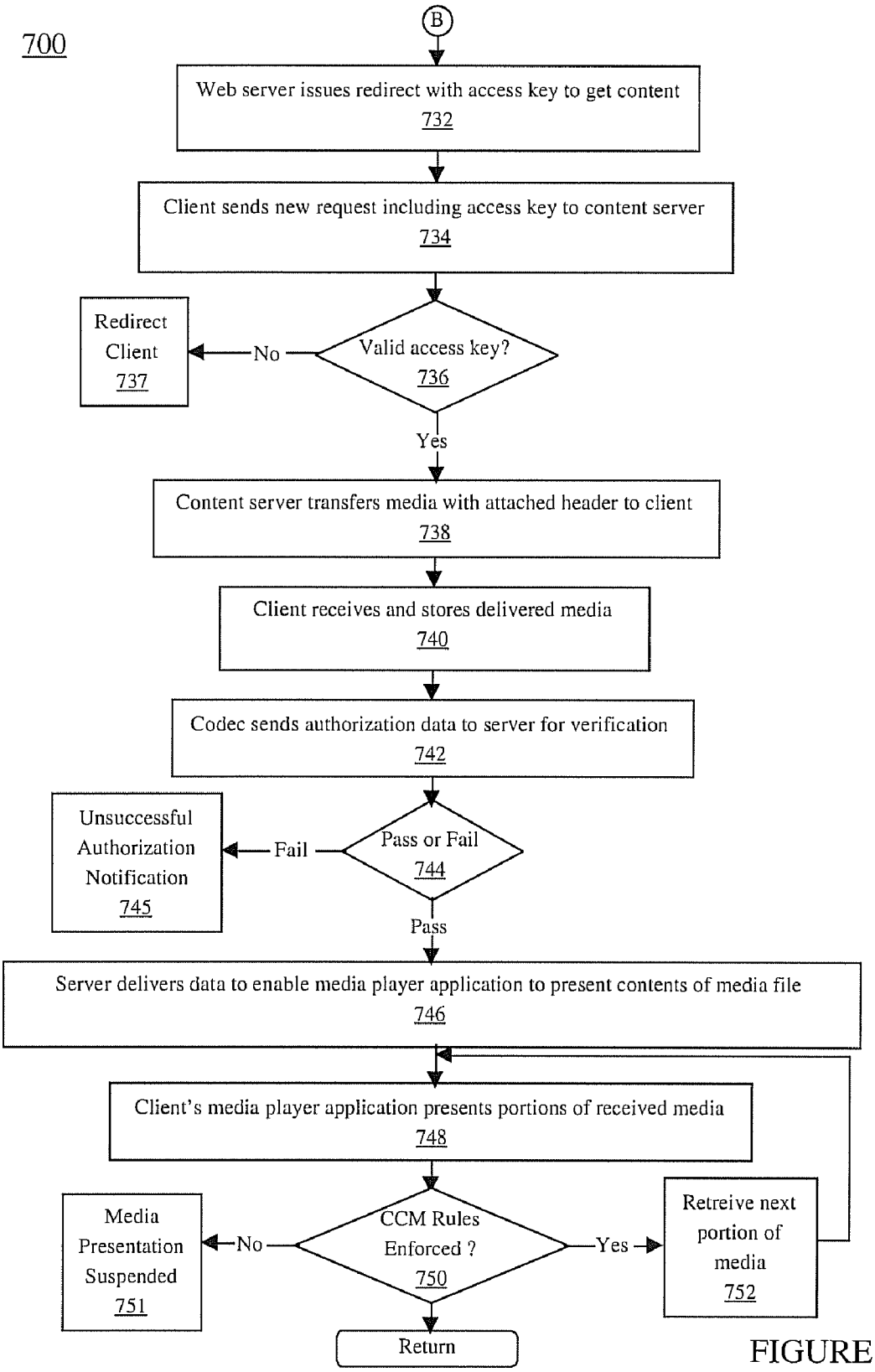

700
B
Web server issues redirect with access key to get content
732
Client sends new request including access key to content server
734
Valid access key?
736
No
Redirect Client
737
Yes
Content server transfers media with attached header to client
738
Client receives and stores delivered media
740
Codec sends authorization data to server for verification
742
Pass or Fail
744
Fail
Unsuccessful Authorization Notification
745
Pass
Server delivers data to enable media player application to present contents of media file
746
Client's media player application presents portions of received media
748
CCM Rules Enforced ?
750
No
Media Presentation Suspended
751
Yes
Retreive next portion of media
752
Return

FIGURE 7C

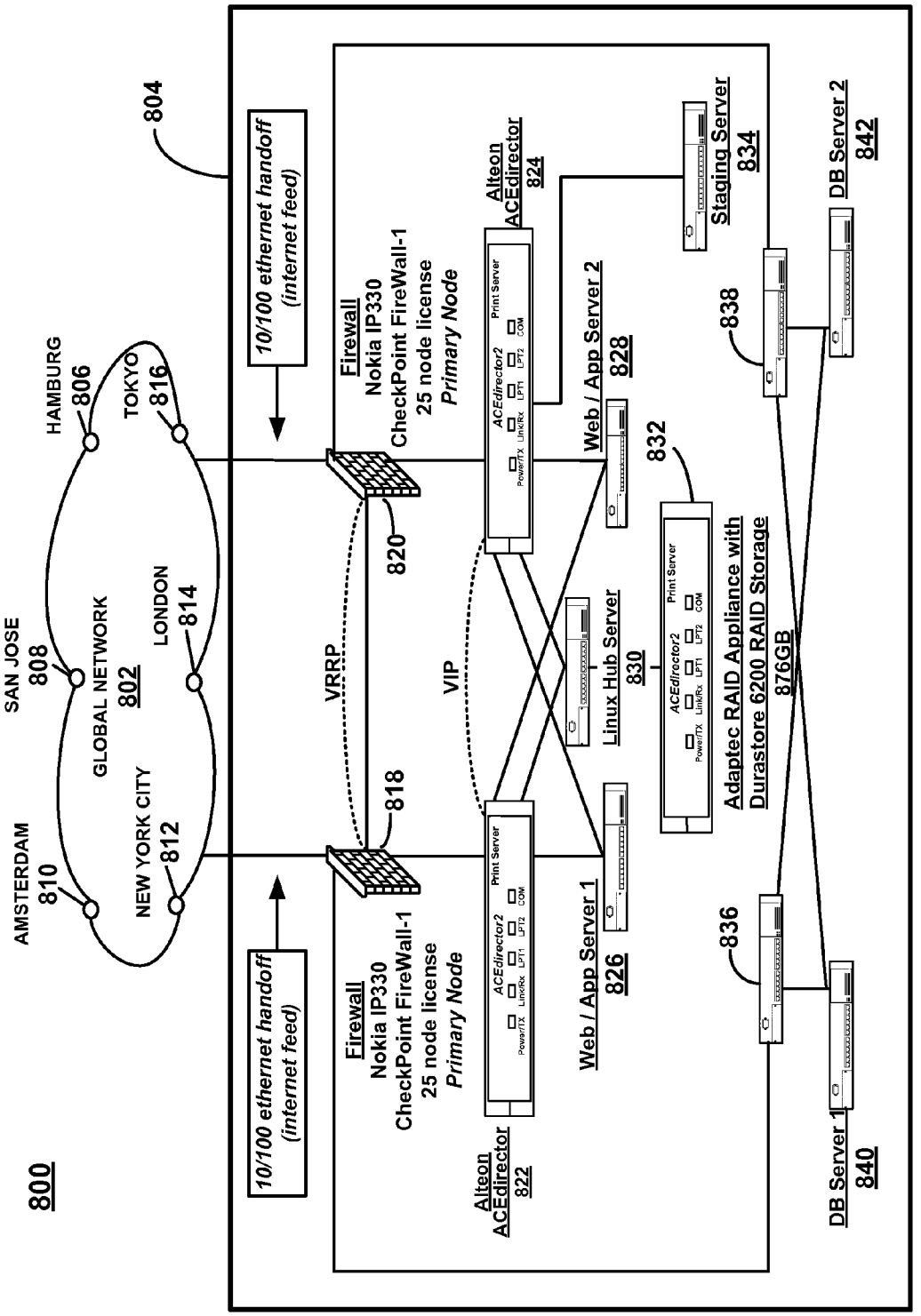

800
804
10/100 ethernet handoff (internet feed)
Firewall
Nokia IP330
CheckPoint FireWall-1
25 node license
Primary Node
Alteon ACEdirector 824
Staging Server 834
DB Server 2 842
Web / App Server 2 828
838
832
HAMBURG 806
TOKYO 816
SAN JOSE 808
GLOBAL NETWORK 802
LONDON 814
NEW YORK CITY 812
AMSTERDAM 810
VRRP
VIP
820
818
Linux Hub Server 830
Adaptec RAID Appliance with Durastore 6200 RAID Storage 876GB
Web / App Server 1 826
836
DB Server 1 840
Alteon ACEdirector 822
10/100 ethernet handoff (internet feed)
Firewall
Nokia IP330
CheckPoint FireWall-1
25 node license
Primary Node

FIG. 8

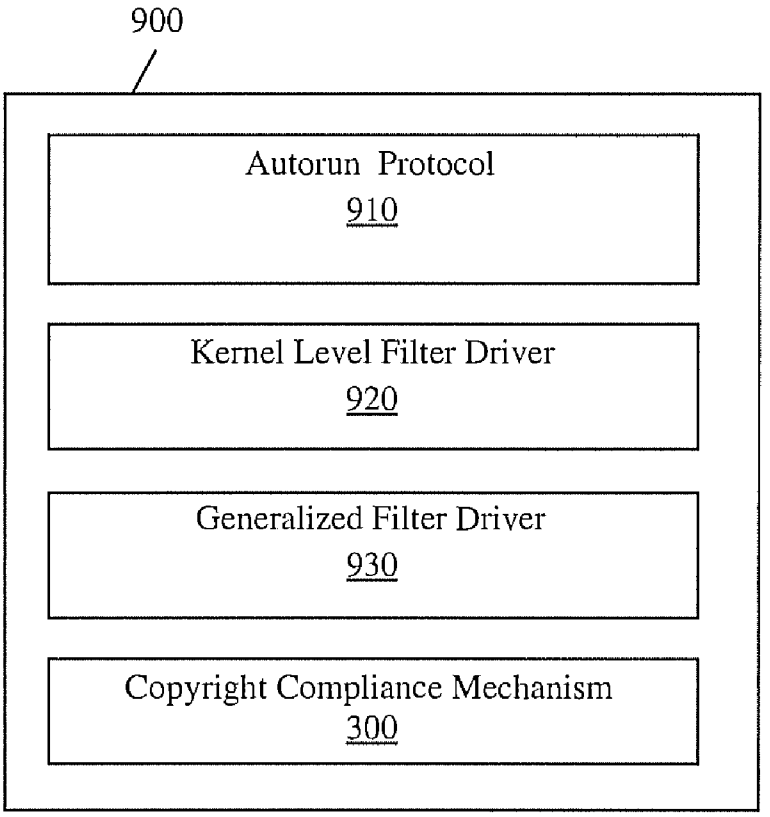

900
Autorun Protocol
910
Kernel Level Filter Driver
920
Generalized Filter Driver
930
Copyright Compliance Mechanism
300

FIGURE 9

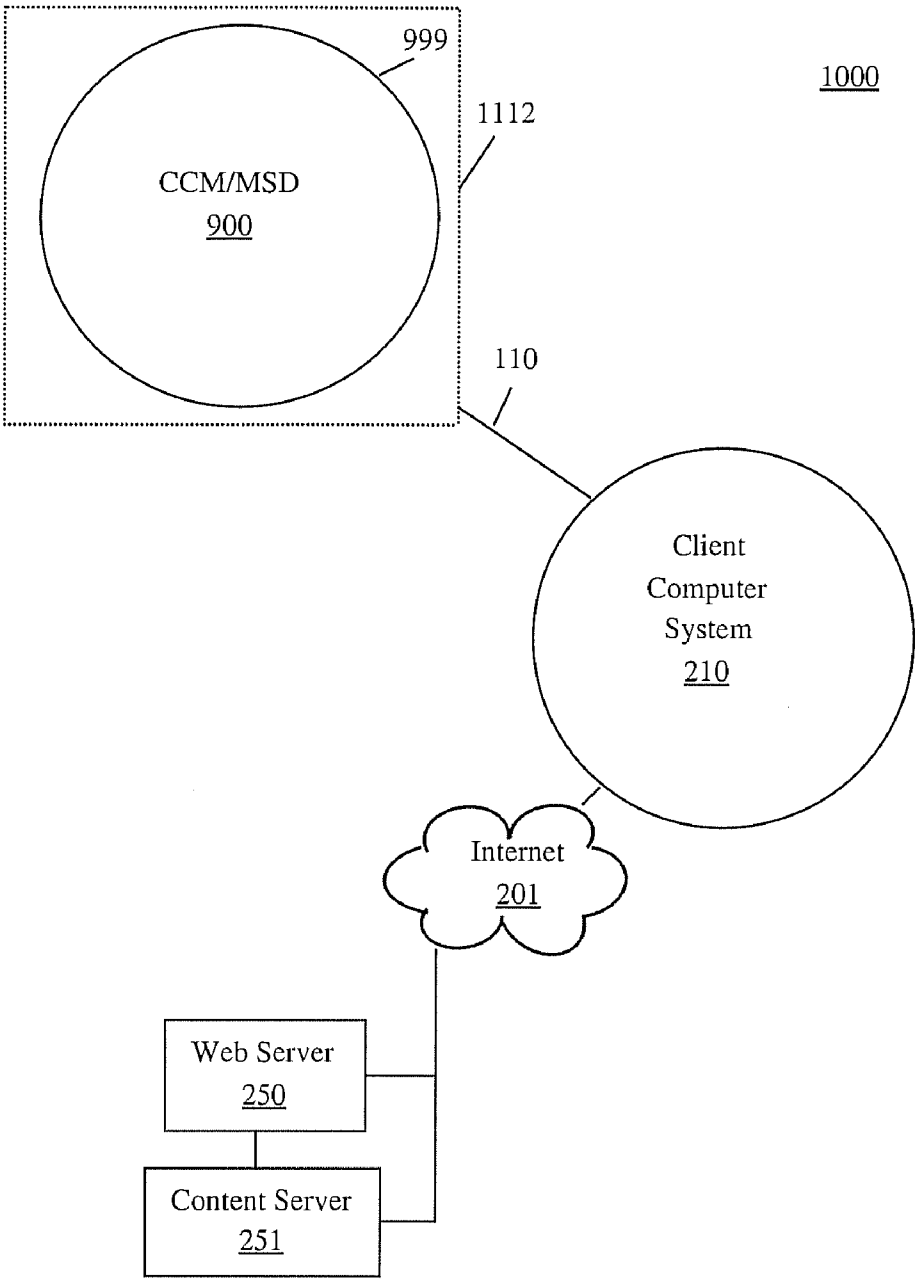

999
1000
1112
CCM/MSD
900
110
Client
Computer
System
210
Internet
201
Web Server
250
Content Server
251

FIGURE 10

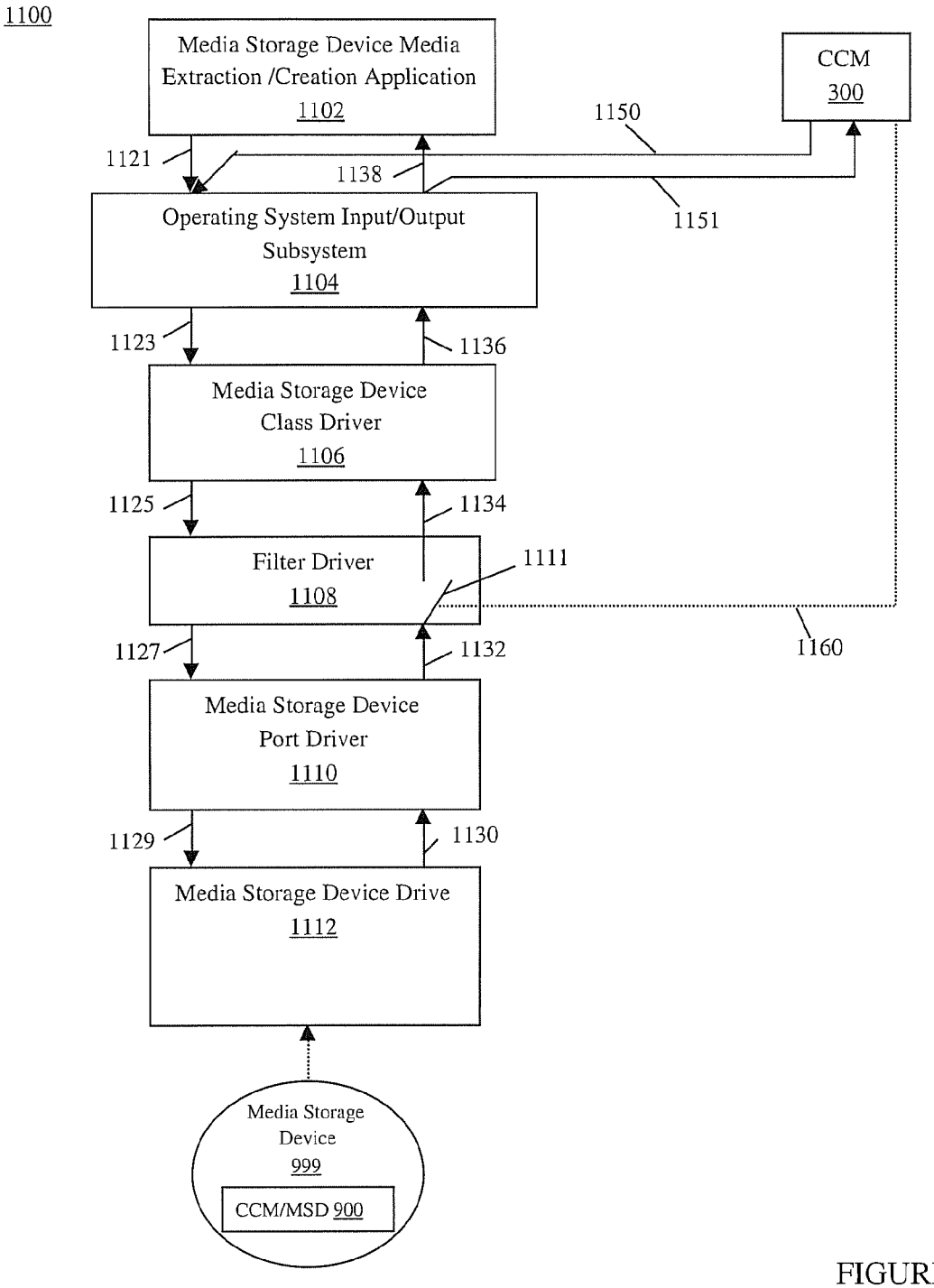

1100
Media Storage Device Media Extraction /Creation Application 1102
CCM 300
1150
1121
1138
1151
Operating System Input/Output Subsystem 1104
1123
1136
Media Storage Device Class Driver 1106
1125
1134
Filter Driver 1108
1111
1160
1127
1132
Media Storage Device Port Driver 1110
1129
1130
Media Storage Device Drive 1112
Media Storage Device 999
CCM/MSD 900

FIGURE 11

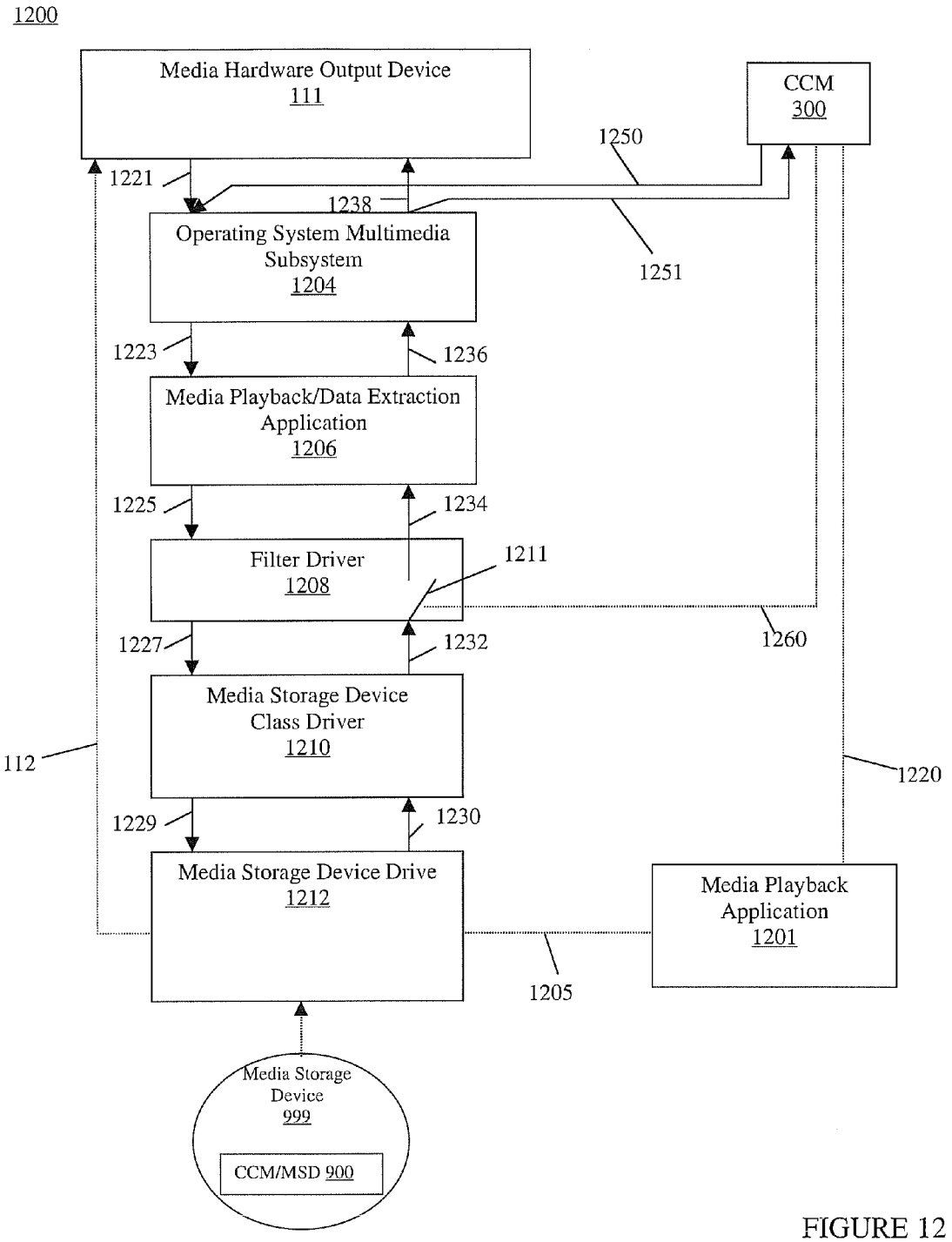

1200
Media Hardware Output Device
111
CCM
300
1250
1221
1238
1251
Operating System Multimedia Subsystem
1204
1223
1236
Media Playback/Data Extraction Application
1206
1225
1234
Filter Driver
1208
1211
1260
1227
1232
Media Storage Device Class Driver
1210
112
1220
1229
1230
Media Storage Device Drive
1212
Media Playback Application
1201
1205
Media Storage Device
999
CCM/MSD 900

FIGURE 12

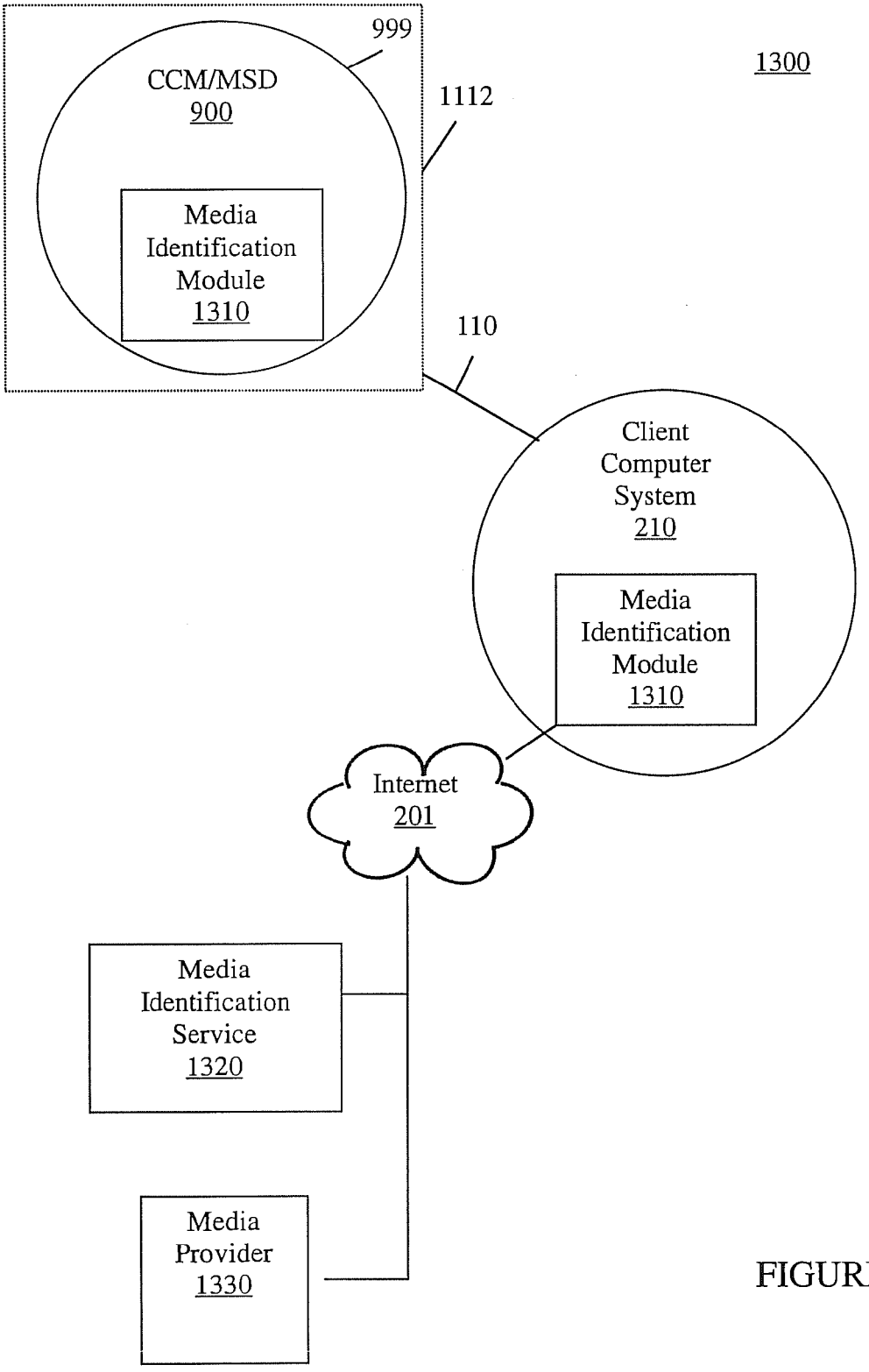

999
CCM/MSD
900
Media
Identification
Module
1310
1112
1300
110
Client
Computer
System
210
Media
Identification
Module
1310
Internet
201
Media
Identification
Service
1320
Media
Provider
1330

FIGURE 13

METHOD AND SYSTEM FOR SELECTIVELY CONTROLLING ACCESS TO PROTECTED MEDIA ON A MEDIA STORAGE DEVICE

CROSS REFERENCE TO RELATED APPLICATIONS

The present patent application is a continuation of U.S. patent application Ser. No. 10/771,809, filed Feb. 3, 2004 now U.S. Pat. No. 7,904,964, entitled "Method And System For Selectively Controlling Access To Protected Media On A Media Storage Device," by Hank Risan et al., assigned to the assignee of the present application and incorporated in its entirety herein.

FIELD OF THE INVENTION

The present invention relates to electronic media. More particularly, the present invention relates to preventing unauthorized recording of electronic media disposed on a media storage device.

BACKGROUND OF THE INVENTION

One of the problems faced in attempting to effectively control media files on a media storage device, e.g., a compact disk (CD), in a secure and controlled manner is that current media storage devices need to be compatible with both home media storage device players, e.g., a CD, digital versatile disk (DVD) or other player, and media storage device drives which may be connected to a computer system. Many of these players/drives were designed in 1982, and the media storage device needs to be backwards compatible with those players/drives.

Media storage device drives are essentially data transducers, meaning they convert bit stream data into electronic waveform that is output, e.g., as an analog waveform, harmonic waveform, to speakers and/or other devices to render sound.

A computer system is more problematic because in addition to its transducing abilities, it may also be: A) a morphogenic system, meaning that a user can take data, reorganize the data, and morph it into other forms on the computer; and/or B) a replicator system, meaning that it can also copy or capture or store or reproduce the data. As a result, if a user can digitally access media stored on a CD using a computer, they reorganize the data and/or reproduce and distribute unauthorized copies of the data. This is especially problematic for owners of copyright protected media such as music, computer software programs, multimedia presentations such as movies, etc.

The data format of a media storage device, e.g., a CD, was designed in 1982 and it was not designed with any security in mind. This is because it was designed to be effective media for data transduction, and as such, did not include provisions for effective copyright protection or Digital Rights Management (DRM).

Some companies that have attempted to provide copyright protection are doing so in a way that is designed to exploit inefficiencies or discrepancies between the home player and the media storage device drive connected to a computer system. To provide media files for both players/drives, those companies do multisession tracks. The media storage device, e.g., CD/DVD, delivers two sets of data. In one example, a plus sign may be used to indicate that the CD/DVD is a mixed disc, having both data for the computer and music for the home machine Double clicking on the icon initiates autoplay of the CD/DVD, which in one example, activates a player provided by the CD/DVD.

One set of streaming data is for the media storage device drive connected to a computer system (generally requested by a proprietary player and delivered in a highly compressed bit form to the computer/user) that may have some kind of digital rights management. For example, when a media storage device is inserted into a device drive connected to a computer system, the user may be presented with a proprietary player having a bit rate of approximately 128 Kbps, which can present a highly compressed version of the original to the user so they will be able to experience the media file.

Disadvantageously, a data stream of 128 Kbps is severely degraded from the original media. In many instances, common compression ratios of original waveforms are approximately a ten to one compression ratio. A ten to one compression ratio typically results in degradation that is readily audible. Thus, the user would be experiencing poor quality sound.

The other set of data stored by a CD/DVD is an audio file that is accessed by a home music or video system and the user is able to experience the media file. Inserting the media storage device into the home audio/video device enables the user to experience the media file in an uncompressed high quality manner, replicating the original form of the media file.

In many instances, all that is needed is a click of the mouse to strip the DRM protection off the media storage device, and the media file becomes available for reproduction and distribution. Alternative means to defeat copyright protection of media files can be as easy as using a magic marker technique. In this technique, a user marks the outer track on a media storage device, e.g., a CD, with a permanent marker, e.g., a Sharpie. When the computer tries to read the first track, it fails, and by default, then reads the next track, usually where the music begins.

Additionally, the media file copyright holders are being sold on the premise that a degraded media file is better than the original because you can't control the original on the computer. Therefore, users may be less likely to use a computer to record/capture/reproduce a poor quality version. Once the user does capture the media file, it is a mediocre sounding copy. This fundamental concept of recording companies giving a less than ideal data version on the CD is in the hope that the lack of sound quality will deter users from recording, copying, etc., the media files.

Alternative methods to provide protection and DRM include the use of time clock inefficiencies. For example, one method is to indicate to the computer system that a media file begins further back than where it actually does, which can introduce a series of numerous errors.

Home machines, e.g., CD/DVD players coupled with stereos, in comparison to CD/DVD drives coupled with a computer system, are extremely tolerant of errors. Home CD/DVD players are designed to read from CDs and DVDs that have been mistreated, e.g., scratched, left out of their jewel case, etc. The home players have substantial error correcting capabilities. Thus, if a CD/DVD has data that was given a negative start time, the home players detects that there is no such thing as a negative start time, and then the home player commences playback.

However, computers are more "gullible," meaning that they believe what you tell them. So if the CD/DVD indicates a negative start time, then the media storage device drive connected to a the computer system may not be able to play a particular media file.

There are also legacy issues and compatibility issues. The consumer is being given a faulty product. In many instances, a disclaimer commonly found on current CDs and DVDs says that if the CD/DVD does not function, return the CD/DVD for exchange. Many users may find this intermittent functionality unacceptable and having to return CD/DVD may cause the user to postpone or, more severely, cancel future CD/DVD purchases.

Applications are readily available via the Internet for the express purpose of producing an exact audio copy of media files on a media storage device. One example is Exact Audio Copy, a freeware software program freely available on the Internet which produces an exact audio copy in .wav file format. Using Exact Audio Copy, circumventing existing protection can be accomplished without modification to the existing technology. The Exact Audio Copy application bypasses the multisession data tracks and goes directly to the audio tracks. This can be accomplished by loading the Exact Audio Copy onto a computer, inserting a CD, and pressing a button or two to copy the audio tracks.

Additionally, there are "ripping" applications, readily available via the Internet, that read the redbook, which enables the ripping application to access the table of contents, and the ripping application goes to the audio tracks where it can "rip" the audio or video file.

Further, DRM protection methods implemented as a stand alone device, meaning that the DRM and copy protection resides in software that resides on the disk are also problematic. This is because when circumvention of the DRM on the media storage device occurs, little if anything can be done because the DRM controls are also bypassed. There may not be any communication with the computer or the Internet.

Software DRM solutions are additionally problematic for CDs and DVDs because they frequently do not provide DRM compliance, and it is foreseen that software solutions will not provide DRM protection in the future, particularly with the introduction of new computer operating systems and new media formats. These types of software DRM solutions are difficult to morph into a secure format once operating systems change.

In many instances, demo media files are being copied and released prior to release of the actual media file. In other instances, unauthorized copies of protected media files, e.g., CDs and/or DVDs are being released before the release of the music and/or the movies. In some instances, unauthorized copies of protected media files are outselling legally produced media files.

Further, many of the media player/recorder applications are designed to capture and record incoming media files in a manner that circumvents controls implemented by a media player application inherent to an operating system, e.g., QuickTime for Apple, MediaPlayer for Windows™, etc., or downloadable from the Internet, e.g., RealPlayer, LiquidAudio, or those provided by webcasters, e.g., PressPlay, for controlling unauthorized recording of media files. Also, many digital recording devices, e.g., mini-disc recorders, MP3 recorders, and the like, can be coupled to a digital output of a computer system, e.g., a USB port, a S/Pdif out, and the like, to capture the media file.

Thus, once the data on the media storage device is digitally accessed and/or stored by a computer system, the likelihood of defeating existing DRM protection methods is greatly increased because the data can be stored for an indefinite period of time. While the copyright holders want to distribute their material to the widest possible audience, they may also want to prevent digitally accessing the material because, given enough time, any method for providing DRM protection can be circumvented. Therefore, it is desired to prevent a computer system from digitally accessing a copyright protected media file to prevent unauthorized storage, transformation, and/or distribution of the media while still allowing a user to use and enjoy the media.

It is also desired to prevent recording applications, such as Total Recorder, Sound Forge, and numerous others, that are adapted to establish a connection with a kernel level driver operable within an operating system to capture and redirect the media file to create an unauthorized reproduction of a media file. It is also desired to prevent recording applications, such as Total Recorder, Sound Forge, and numerous others, that are adapted to establish a connection with a kernel level driver operable within an operating system to capture and redirect the media file to create an unauthorized reproduction of a media file. It is also desired to prevent recording applications from accessing a kernel-mode media device driver and making unauthorized copies of copyrighted material through some available network, e.g., wireline, wireless, P2P, etc., or through a communicative coupling. It is further desirable to prevent access to a kernel based media device driver by a recording application for the purpose of making unauthorized copies of media files from or to alternative sources, e.g., CD players, DVD players, removable hard drives, personal electronic and/or recording devices, e.g., MP3 recorders, and the like. Finally, it is desirable to allow presentation of copyrighted material while preventing a computer system from digitally accessing the copyrighted material.

Current methods of preventing unauthorized reproduction of protected medial files on media storage device are inadequate.

SUMMARY OF THE INVENTION

Accordingly, a need exists for a method and system that controls unauthorized reproduction of protected media files disposed on a media storage device. Embodiments of the present invention satisfy the above mentioned needs.

A method of preventing unauthorized reproduction of media disposed on a media storage device according to one embodiment is described. The method comprises installing a compliance mechanism on the computer system. The compliance mechanism is communicatively coupled with the computer system when installed thereon. The compliance mechanism is for enforcing compliance with a usage restriction applicable to the media. The method further includes obtaining control of a data input pathway operable on the computer system. The method further includes accessing data that is disposed on the media storage device that is associated with the usage restriction. The method further includes preventing the computer system from accessing the media digitally via the data pathway while enabling presentation of the protected media.

In another embodiment, a system for selectively controlling access to protected media on a media storage device is described. In one embodiment, the system is comprised of a compliance mechanism disposed on the media storage device. The compliance mechanism is configured to be installed on and communicatively coupled with a computer system. The compliance mechanism is for complying with a usage restriction applicable to the protected media. The system further includes a device drive coupled with the computer system for accessing the media storage device. The device drive is communicatively coupled with an analog sound rendering device coupled with the computer system. The system further includes the compliance mechanism being configured to prevent accessing the protected media via a digital data

pathway on the computer system while presenting the protected media via the analog sound rendering device.

These and other objects and advantages of the present invention will no doubt become obvious to those of ordinary skill in the art after having read the following detailed description of the preferred embodiments which are illustrated in the various drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and form a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

FIG. **1** is a block diagram of an exemplary computer system that can be utilized in accordance with an embodiment of the present invention.

FIG. **2** is a block diagram of an exemplary network environment that can be utilized in accordance with an embodiment of the present invention.

FIG. **3** is a block diagram of a copyright compliance mechanism in accordance with an embodiment of the present invention.

FIG. **4** is an exemplary system for implementing a copyright compliance mechanism in accordance with an embodiment of the present invention.

FIG. **5**A is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized recording of media files, in accordance with one embodiment of the present invention.

FIG. **5**B is a data flow block diagram showing an implementation of a component of a copyright compliance mechanism for preventing unauthorized recording of media files, in accordance with another embodiment of the present invention.

FIG. **5**C is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized output of media files, in accordance with one embodiment of the present invention.

FIG. **5**D is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized output of media files through media file capture at a kernel level, in accordance with one embodiment of the present invention.

FIG. **6** is a block diagram of an environment for preventing unauthorized copying of a media file, in accordance with one embodiment of the present invention.

FIGS. **7**A, **7**B, and **7**C are a flowchart of steps performed in accordance with an embodiment of the present invention for providing a copyright compliance mechanism to a network of client and server computer systems.

FIG. **8** is a diagram of an exemplary global media delivery system in which a copyright compliance mechanism can be implemented in accordance with an embodiment of the present invention.

FIG. **9** is a block diagram of a copyright compliance mechanism installable from a media storage device in accordance with one embodiment of the present invention.

FIG. **10** is a block diagram of a communicative environment for controlling unauthorized reproduction of protected media files disposed on a media storage device, in accordance with one embodiment of the present invention.

FIG. **11** is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized reproduction of a protected media file located on a media storage device, in accordance with one embodiment of the present invention.

FIG. **12** is a data flow block diagram showing an implementation of a copyright compliance mechanism for preventing unauthorized recording of media files, in accordance with one embodiment of the present invention.

FIG. **13** is a block diagram of a communicative environment for identifying media disposed on a media storage device in accordance with embodiments of the present invention.

DETAILED DESCRIPTION

Reference will now be made in detail to embodiments of the invention, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with embodiments, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternatives, modifications, and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims. Furthermore, in the following detailed description of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, to one of ordinary skill in the art, the present invention may be practiced without these specific details. In other instances, well known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of the present invention.

Some portions of the detailed description which follows are presented in terms of procedures, logic blocks, processing, and other symbolic representations of operations on data bits within a computing system or digital memory system. These descriptions and representations are the means used by those skilled in the data processing art to most effectively convey the substance of their work to others skilled in the art. A procedure, logic block, process, etc., is herein, and generally, conceived to be a self-consistent sequence of steps or instructions leading to a desired result. The steps are those involving physical manipulations of physical quantities. Usually, though not necessarily, these physical manipulations take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated in a computing system or similar electronic computing device. For reasons of convenience, and with reference to common usage, these signals are referred to as bits, values, elements, symbols, characters, terms, numbers, or the like, with reference to the present invention.

It should be borne in mind, however, that all of these terms are to be interpreted as referencing physical manipulations and quantities and are merely convenient labels and are to be interpreted further in view of terms commonly used in the art. Unless specifically stated otherwise as apparent from the following discussions, it is understood that discussions of the present invention refer to actions and processes of a computing system, or similar electronic computing device that manipulates and transforms data. The data is represented as physical (electronic) quantities within the computing system's registers and memories and is transformed into other data similarly represented as physical quantities within the computing system's memories or registers, or other such information storage, transmission, or display devices.

In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. To one skilled in the art, the present invention may be practiced without these specific details. In other instances, well-known

structures and devices are shown in block diagram form in order to avoid obscuring the present invention.

Embodiments of the present invention are discussed primarily in the context of a network of computer systems such as a network of desktop, workstation, laptop, handheld, and/or other portable electronic device. For purposes of the present application, the term "portable electronic device" is not intended to be limited solely to conventional handheld or portable computers. Instead, the term "portable electronic device" is also intended to include many mobile electronic devices. Such mobile devices include, but are not limited to, portable CD players, MP3 players, mobile phones, portable recording devices, satellite radios, portable video playback devices (digital projectors), personal video eyewear, and other personal digital devices. Additionally, embodiments of the present invention are also well suited for implementation with theater presentation systems for public and/or private presentation in theaters, auditoriums, convention centers, etc.

FIG. **1** is a block diagram illustrating an exemplary computer system **100** that can be used in accordance with embodiments of the present invention. It is noted that computer system **100** can be nearly any type of computing system or electronic computing device including, but not limited to, a server computer, a desktop computer, a laptop computer, or other portable electronic device. Within the context of embodiments of the present invention, certain discussed processes, procedures, and operations can be realized as a series of instructions (e.g., a software program) that reside within computer system memory units of computer system **100** and are executed by a processor(s) of computer system **100**. When executed, the instructions cause computer system **100** to perform specific actions and exhibit specific behavior which is described in detail herein.

Computer system **100** of FIG. **1** comprises an address/data bus **101** for communicating information, one or more central processors **102** coupled to bus **101** for processing information and instructions. Central processor(s) **102** can be a microprocessor or any alternative type of processor. Computer system **100** also includes a computer usable volatile memory **103**, e.g., random access memory (RAM), static RAM (SRAM), dynamic RAM (DRAM), synchronous dynamic RAM (SDRAM), double data rate RAM (DDR RAM), etc., coupled to bus **101** for storing information and instructions for processor(s) **102**. Computer system **100** further includes a computer usable non-volatile memory **104**, e.g., read only memory (ROM), programmable ROM (PROM), electronically programmable ROM (EPROM), electrically erasable PROM (EEPROM), flash memory (a type of EEPROM), etc., coupled to bus **101** for storing static information and instructions for processor(s) **102**. In one embodiment, non-volatile memory **104** can be removable.

System **100** also includes one or more signal generating and receiving devices, e.g., signal input/output device(s) **105** coupled to bus **101** for enabling computer **100** to interface with other electronic devices. Communication interface **105** can include wired and/or wireless communication functionality. For example, in one embodiment, communication interface **105** is a serial communication port, but can alternatively be one of a number of well known communication standards and protocols, e.g., a parallel port, an Ethernet adapter, a FireWire (IEEE 1394) interface, a Universal Serial Bus (USB), a small computer system interface (SCSI), an infrared (IR) communication port, a Bluetooth wireless communication adapter, a broadband connection, a satellite link, an Internet feed, a cable modem, and the like. In another embodiment, a digital subscriber line (DSL) can be implemented as signal input/output device **105**. In such an instance, communication interface **105** may include a DSL modem. In embodiments of the present invention, these components are disposed on a circuit board **110** which is contained within a cover assembly.

System **100** can also include an optional display device **106** coupled to bus **101** for displaying video, graphics, and/or alphanumeric characters. It is noted that display device **106** can be a CRT (cathode ray tube), a thin CRT (TCRT), a liquid crystal display (LCD), a plasma display, a field emission display (FED), video eyewear, a projection device (e.g., an LCD, a digital light projector (DLP), a movie theater projection system, and the like.), or any other display device suitable for displaying video, graphics, and alphanumeric characters recognizable to a user.

Computer system **100** of FIG. **1** further includes an optional alphanumeric input device **107** coupled to bus **101** for communicating information and command selections to processor(s) **102**, in one embodiment. Alphanumeric input device **107** is coupled to bus **101** and includes alphanumeric and function keys. Computer **100** can also include an optional cursor control device **108** coupled to bus **101** for communicating user input information and command selections to processor(s) **102**. Cursor control device **108** can be implemented using a number of well-known devices such as a mouse, a trackball, a track pad, a joy stick, a optical tracking device, a touch screen, etc. It is noted that a cursor can be directed and/or activated via input from alphanumeric input device **107** using special keys and key sequence commands. It is further noted that directing and/or activating the cursor can be accomplished by alternative means, e.g., voice activated commands, provided computer system **100** is configured with such functionality.

Computer **100** of FIG. **1** can also include one or more computer usable data storage device(s) **109** coupled to bus **101** for storing instructions and information, in one embodiment of the present invention. In one embodiment, data storage device **109** can be a magnetic storage device, e.g., a hard disk drive, a floppy disk drive, a zip drive, or other magnetic storage device. In another embodiment, data storage device **109** can be an optical storage device, e.g., a CD (compact disc), a DVD (digital versatile disc), or other alternative optical storage device. Alternatively, any combination of magnetic, optical, and alternative storage devices can be implemented, e.g., a RAID (random array of independent disks or random array of inexpensive discs) configuration. It is noted that data storage device **109** can be located internal and/or external of system **100** and communicatively coupled with system **100** utilizing wired and/or wireless communication technology, thereby providing expanded storage and functionality to system **100**. It is further noted that nearly any portable electronic device (not shown) can also be communicatively coupled with system **100** via utilization of wired and/or wireless technology, thereby expanding the functionality of system **100**.

Computer **100** of FIG. **1** also includes an analog sound rendering device **111** (e.g., a sound card) that is communicatively coupled with data storage device **109** via signal path **112**. In an embodiment of the present invention, data storage device **109** is a CD/DVD device drive. Typically, CD/DVD device drives have a connector (not shown) that allows coupling a device drive directly with an audio card (e.g., analog sound rendering device **111**) using a cable (e.g., signal path **112**). When the device drive is playing an audio CD, the device drive emits the audio data out of the connector via signal path **112** to the sound card. In an embodiment of the present invention, the data is sent as an analog signal directly to device **111** via signal path **112**. As a result, the data bypasses data bus **101** and cannot be accessed by processor

102. It is appreciated that analog sound rendering device 111 may be a sound rendering module that is disposed integrally on circuit board 110 in embodiments of the present invention.

FIG. 2 is a block diagram of an exemplary network 200 in which embodiments of the present invention may be implemented. In one embodiment, network 200 enables one or more authorized client computer systems (e.g., 210, 220, and 230), each of which are coupled to Internet 201, to receive media content from a media content server, e.g., 251, via the Internet 201 while preventing unauthorized client computer systems from accessing media stored in a database of content server 251.

Network 200 includes a web server 250 and a content server 251 which are communicatively coupled to Internet 201. Further, web server 250 and content server 251 can be communicatively coupled without utilizing Internet 201, as shown. Web server 250, content server 251, and client computers 210, 220, and 230 can communicate with each other. It is noted that computers and servers of network 200 are well suited to be communicatively coupled in various implementations. For example, web server 250, content server 251, and client computer systems 210, 220, and 230 of network 200 can be communicatively coupled via wired communication technology, (e.g., twisted pair cabling, fiber optics, coaxial cable, etc.), or wireless communication technology, or a combination of wired and wireless communication technology.

Still referring to FIG. 2, it is noted that web server 250, content server 251, and client computer systems 210, 220 and 230 can, in one embodiment, be each implemented in a manner similar to computer system 100 of FIG. 1. However, the server and computer systems in network 200 are not limited to such implementation. Additionally, web server 250 and content server 251 can perform various functionalities within network 200. It is also noted that, in one embodiment, web server 250 and content server 251 can both be disposed on a single or a plurality of physical computer systems.

Further, it is noted that network 200 can operate with and deliver any type of media content, (e.g., audio, video, multimedia, graphics, information, data, software programs, etc.) in any format. In one embodiment, content server 251 can provide audio and video files to client computers 210-230 via Internet 201.

FIG. 3 is a block diagram of an exemplary copyright compliance mechanism (CCM) 300, for controlling distribution of, access to, and/or copyright compliance of media files, in accordance with an embodiment of the present invention. In one embodiment, CCM 300 contains one or more software components and instructions for enabling compliance with DMCA (digital millennium copyright act) restrictions and/or RIAA (recording industry association of America) licensing agreements regarding media files. Additionally, CCM 300's software components and instructions further enable compliance with international recording restrictions such as those defined by the IFPI (international federation of phonographic industry), the ISRC (international standard recording industry), other foreign or international recording associations, and/or foreign or international licensing restrictions. In one embodiment, CCM 300 may be integrated into existing and/or newly developed media player and recorder applications. In another embodiment, CCM 300 may be implemented as a stand-alone mechanism but in conjunction with existing media player/recorder applications, such that CCM 300 is communicatively coupled to existing media player/recorder applications. Alternatively, CCM 300 can be installed as a stand-alone mechanism within a client computer system 210. Additionally, CCM 300 can be installed as a stand-alone mechanism and/or as part of a bundled application from a media storage device, e.g., a CD, a DVD, an SD (secure digital card), and/or as part of an installation package. In another embodiment, CCM 300 can be installed in conjunction with a presentation of desired media content, e.g., listening to an audio file on a music CD, reading a document, viewing a video, etc. It is noted that, in one embodiment, CCM 300 may be installed on client system 210 in a clandestine manner, relative to a user.

There are currently two types of copyright licenses recognized by the digital millennium copyright act (DMCA) for the protection of broadcasted copyrighted material. One of the broadcast copyright licenses is a compulsory license, also referred to as a statutory license. A statutory license is defined as a non-interactive license, meaning the user cannot select the song. Further, a caveat of this type of broadcast license is that a user must not be able to select a particular music file for the purpose of recording it to the user's computer system or other storage device. Another caveat of a statutory license is that a media file is not available more than once for a given period of time. In one example, the period of time can be three hours.

The other type of broadcast license recognized by the DMCA is an interactive licensing agreement. An interactive licensing agreement is commonly with the copyright holder, (e.g., a record company, the artist, etc.),wherein the copyright holder grants permission for a server, (e.g., web server 250 and/or content server 251) to broadcast copyrighted material. Under an interactive licensing agreement, there are a variety of ways that copyrighted material, (e.g., music files) can be broadcast. For example, one manner in which music files can be broadcast is to allow the user to select and listen to a particular sound recording, but without the user enabled to make a sound recording. This is commonly referred to as an interactive with "no save" license, meaning that the end user is unable to save or store the media content file in a relatively permanent manner. Additionally, another manner in which music files can be broadcast is to allow a user to not only select and listen to a particular music file, but additionally allow the user to save that particularly music file to disc and/or burn the music file to a CD, MP3 player, or other portable electronic device. This is commonly referred to as an interactive with "save" license, meaning that the end user is enabled to save, store, or burn to CD, the media content file.

It is noted that the DMCA allows for the "perfect" reproduction of the sound recording. A perfect copy of a sound recording is a one-to-one mapping of the original sound recording into a digitized form, such that the perfect copy is virtually indistinguishable and/or has no audible differences from the original recording.

In one embodiment, CCM (copyright compliance mechanism) 300 can be stored in web server 250 and/or content server 251 of network 200 and is configured to be installed into each client computer system, e.g., 210, 220 and 230, enabled to access the media files stored within content server 251 and/or web server 250. Alternatively, copyright compliance mechanism 300 can be externally disposed and communicatively coupled with a client computer system 200 via, e.g., a portable media device (not shown). In yet another embodiment, CCM 300 can be configured to be operable from a media storage device (e.g., 108) upon which media files may be disposed.

Copyright compliance mechanism 300 is configured to be operable while having portions of components, entire components, combinations of components, disposed within one or more memory units and/or data storage devices of a computer system, e.g., 210, 220, and/or 230.

Additionally, CCM **300** can be readily updated, (e.g., via Internet **201**), to reflect changes or developments in the DMCA, copyright restrictions and/or licensing agreements pertaining to any media file, changes in current media player applications and/or the development of new media player applications, or to counteract subversive and/or hacker-like attempts to unlawfully obtain one or more media files. It is noted that updating CCM **300** can include, but is not limited to, updating portions of components, entire components and/or combinations of components of CCM **300**.

Referring to FIG. **3**, CCM **300** can include instructions **301** for enabling client computer system **210** to interact with web server **250** and content server **251** of network **200**. Instructions **301** enable client computer system **210** to interact with servers, (e.g., **250** and **251**) in a network, (e.g., **200**).

The copyright compliance mechanism **300** also includes, in one embodiment, a user ID generator **302**, for generating a user ID or user key, and one or more cookie(s) which contain(s) information specific to the user and the user's computer system, e.g., **210**. In one embodiment, the user ID and the cookie(s) are installed in computer system **210** prior to installation of the remaining components of the CCM **300**. It is noted that the presence of a valid cookie(s) and a valid user ID/user key are verified by web server **250** before the remaining components of a CCM **300** can be installed, within one embodiment of the present invention. Additionally, the user ID/user key can contain, but is not limited to, the user's name, the user's address, the user's credit card number, an online payment account number, a verified email address, and an identity (username) and password selected by the user.

Furthermore, the cookie can contain, but is not limited to, information specific to the user, information regarding the user's computer system **210**, (e.g., types of media applications operational therewithin), a unique identifier associated with computer system **210**, e.g., a MAC address, an IP address, and/or the serial number of the central processing unit (CPU) operable on computer system **210** and other information specific to the computer system and its user.

Additionally, in another embodiment, user biometrics may be combined with computer system **210** data and user data and incorporated into the generation of a user ID. Alternatively, biometric data may be used in a stand-alone implementation in the generation of the user ID. Types of biometric data that may be utilized to provide a user ID and/or authorization may include, but is not limited to, fingerprint data, retinal scan data, handprint data, facial recognition data, and the like.

It is noted that the information regarding the client computer system, e.g., **210**, the user of system **210**, and an access key described herein can be collectively referred to as authorization data.

Advantageously, with information regarding the user and the user's computer system, e.g., **210**, web server **250** can determine when a user of one computer system, e.g., **210**, has given their username and password to another user using another computer system, e.g., **220**. Because the username, password, and the user's computer system **210** are closely associated, web server **250** can prevent unauthorized access to copyrighted media content, in one embodiment. It is noted that if web server **250** detects unauthorized sharing of usernames and passwords, it can block the user of computer system **210**, as well as other users who unlawfully obtained the username and password, from future access to copyrighted media content available through web server **250**. Web server **250** can invoke blocking for any specified period of time, e.g., for a matter of minutes, hours, months, years, or longer or permanently.

Still referring to FIG. **3**, copyright compliance mechanism **300** further includes a coder/decoder (codec) **303** that, in one embodiment, is adapted to perform, but is not limited to, encoding/decoding of media files, compressing/decompressing of media files, and detecting that delivered media files are encrypted as prescribed by CCM **300**. In the present embodiment, coder/decoder **303** can also extract key fields from a header attached to each media content file for, in part, verification that the file originated from a content server, e.g., **251**. It is noted that CCM can include one or more codecs similar to codec **303**.

In the present embodiment, coder/decoder **303** can also perform a periodic and repeated check of the media file, while the media file is passed to the media player application, (e.g., in a frame by frame basis or in a buffer by buffer basis), to ensure that CCM **300** rules are being enforced at any particular moment during media playback. It is noted that differing coder/decoders **303** can be utilized in conjunction with various types of copyrighted media content including, but not limited to, audio files, video files, graphical files, alphanumeric files and the like, such that any type of media content file can be protected in accordance with embodiments of the present invention.

Within FIG. **3**, copyright compliance mechanism **300** also includes one or more agent programs **304** which are configured to engage in dialogs and negotiate and coordinate transfer of information between a computer system, (e.g., **210**, **220**, or **230**), a server, (e.g., web server **250** and/or content server **251**), and/or media player applications, with or without recording functionality, that are operable within a client computer system, in one embodiment. In the present embodiment, agent program **304** can also be configured to maintain system state, verify that other components are being utilized simultaneously, to be autonomously functional without knowledge of the client, and can also present messages, (e.g., error messages, media information, advertising, etc.), via a display window or electronic mail. This enables detection of proper skin implementation and detection of those applications that are running It is noted that agent programs are well known in the art and can be implemented in a variety of ways in accordance with the present embodiment.

Copyright compliance mechanism **300** also includes one or more system hooks **305**, in one embodiment of the present invention. A system hook **305** is, in one embodiment, a library that is installed in a computer system, e.g., **210**, that intercepts system wide events. For example, a system hook **305**, in conjunction with skins **306**, can govern certain properties and/or functionalities of media player applications operating within the client computer system, e.g., **210**, including, but not limited to, mouse click shortcuts, keyboard shortcuts, standard system accelerators, progress bars, save functions, pause functions, rewind functions, skip track functions, forward track preview, copying to CD, copying to a portable electronic device, and the like.

It is noted that the term govern or governing, for purposes of the present invention, can refer to a disabling, deactivating, enabling, activating, etc., of a property or function. Governing can also refer to an exclusion of that function or property, such that a function or property may be operable but unable to perform in the manner originally intended. For example, during the playing of a media file, the progress bar may be selected and moved from one location on the progress line to another without having an effect on the play of the media file.

Within FIG. **3** it is further noted that codec **303** compares the information for the media player application operating on client computer system, e.g., **210**, with a list of "signatures" associated with known media recording applications. In one

embodiment, the signature can be, but is not limited to being, a unique identifier of a media player application and which can consist of the window class of the application along with a product name string which is part of the window title for the application. Advantageously, when new media player applications are developed, their signatures can be readily added to the signature list via an update of CCM **300** described herein.

The following C++ source code is an exemplary implementation of the portion of a codec **303** for performing media player application detection, in accordance with an embodiment of the present invention. In another embodiment, the following source code can be modified to detect kernel streaming mechanisms operable within a client system, (e.g., **210**).

```
int
IsRecorderPresent(TCHAR * szAppClass,
                  TCHAR * szProdName)
{
        TCHAR     szWndText[__MAX__PATH]; /* buffer to receive title string for window */
        HWND      hWnd;          /* handle to target window for operation */
        int       nRetVal;       /* return value for operation */
        /* initialize variables */
        nRetVal = 0;
        if ( _tcscmp(szAppClass, _T("#32770"))
           == 0)
        {
              /* attempt to locate dialog box with specified window title */
              if ( FindWindow((TCHAR *) 32770, szProdName)
                 != (HWND) 0)
              {
                    /* indicate application found */
                    nRetVal = 1;
              }
        }
        else
        {
              /* attempt to locate window with specified class */
              if ( (hWnd = FindWindow(szAppClass, (LPCTSTR) 0))
                 != (HWND) 0)
              {
                    /* attempt to retrive title string for window */
                    if ( GetWindowText(hWnd,
                                       szWndText,
                                       __MAX__PATH)
                       != 0)
                    {
                          /* attempt to locate product name within title string */
                          if ( _tcsstr(szWndText, szProdName)
                             != (TCHAR *) 0)
                          {
                                /* indicate application found */
                                nRetVal = 1;
                          }
                    }
              }
        }
        /* return to caller */
        return nRetVal;
}
```

Within FIG. **3** it is further noted that codec **303** can also selectively suppress waveform input/output operations to prevent recording of copyrighted media on a client computer system (e.g., **210**). For example, codec **303**, subsequent to detection of bundled media player applications operational in a client computer system, (e.g., **210**), can stop or disrupt the playing of a media content file. This can be accomplished, in one embodiment, by redirecting and/or diverting certain data pathways that are commonly used for recording, such that the utilized data pathway is governed by the copyright compliance mechanism **300**. In one embodiment, this can be performed within a driver shim, (e.g., wave driver shim **309** of FIGS. **5**A, **5**B, **5**C, and **5**D.

A driver shim can be utilized for nearly any software output device, such as a standard Windows™ waveform output device, (e.g., Windows™ Media Player), or hardware output device, (e.g., speakers or headphones). Client computer system **210** is configured such that the driver shim (e.g., **309**) appears as the default waveform media device to client level application programs. Thus, requests for processing of waveform media input and/or output will pass through the driver shim prior to being forwarded to the actual waveform audio driver, (e.g., media device driver **505** of FIGS. **5**A-**5**D). Such waveform input/output suppression can be triggered by other components, (e.g., agent **304**), of CCM **300**, to be active when a recording operation is initiated by a client computer system, e.g., **210**, during the play back of media files which are subject to the DMCA.

It is noted that alternative driver shims can be implemented for nearly any waveform output device including, but not limited to, a Windows™ Media Player. It is further noted that the driver shim can be implemented for nearly any media in nearly any format including, but not limited to, audio media files, audio input and output devices, video, graphic and/or alphanumeric media files and video input and output devices.

The following C++ source code is an exemplary implementation of a portion of a codec **303** and/or a custom media device driver **307** for diverting and/or redirecting certain data pathways that are commonly used for recording of media content, in accordance with an embodiment of the present invention.

```
DWORD
__stdcall
widMessage(UINT          uDevId,
           UINT          uMsg,
           DWORD dwUser,
           DWORD dwParam1,
           DWORD dwParam2)
{
        BOOL          bSkip;      /* flag indicating operation to be skipped */
        HWND          hWndMon;    /* handle to main window for monitor */
        DWORD         dwRetVal;   /* return value for operation */
        /* initialize variables */
        bSkip = FALSE;
        dwRetVal = (DWORD) MMSYSERR_NOTSUPPORTED;
        if (uMsg == WIDM_START)
        {
            /* attempt to locate window for monitor application */
            if ( (hWndMon = FindMonitorWindow( ))
               != (HWND) 0)
            {
                /* obtain setting for driver */
                bDrvEnabled =   (   SendMessage(hWndMon,
                                        uiRegMsg,
                                          0,
                                          0)
                                    == 0)
                              ? FALSE : TRUE;
            }
            if (bDrvEnabled == TRUE)
            {
                /* indicate error in operation */
                dwRetVal = MMSYSERR_NOMEM;
                /* indicate operation to be skipped */
                bSkip = TRUE;
            }
        }
        if (bSkip == FALSE)
        {
            /* invoke entry point for original driver */
            dwRetVal = CallWidMessage(uDevId, uMsg, dwUser, dwParam1, dwParam2);
        }
        /* return to caller */
        return dwRetVal;
}
```

It is noted that when properly configured, system hook **305** can govern nearly any function or property within nearly any media player application that may be operational within a client computer system, (e.g., **210**). In one embodiment, system hook **305** is a DLL (dynamic link library) file. It is further noted that system hooks are well known in the art, and are a standard facility in a Microsoft Windows™ operating environment, and accordingly can be implemented in a variety of ways. However, it is also noted that system hook **305** can be readily adapted for implementation in alternative operating systems, e.g., Apple™ operating systems, Sun Solaris™ operating systems, Linux operating systems, and nearly any other operating system.

In FIG. **3**, copyright compliance mechanism **300** also includes one or more skins **306**, which can be designed to be installed in a client computer system, (e.g., **210**, **220**, and **230**). In one embodiment, skins **306** are utilized to assist in client side compliance with the DMCA (digital millennium copyright act) regarding copyrighted media content. Skins **306** are customizable interfaces that, in one embodiment, are displayed on a display device (e.g., **106**) of computer system

210 and provide functionalities for user interaction of delivered media content. Additionally, skins **306** can also provide a display of information relative to the media content file including, but not limited to, song title, artist name, album title, artist biography, and other features such as purchase inquiries, advertising, and the like.

Furthermore, when system hook **305** is unable to govern a function of the media player application operable on a client computer system, e.g., **210**, such that client computer system could be in non-compliance with DMCA and/or RIAA restrictions, a skin **306** can be implemented to provide compliance.

Differing skins **306** can be implemented depending upon the restrictions applicable, (e.g., DMCA and/or RIAA), to each media content file. For example, in one embodiment, a skin **306***a* may be configured for utilization with a media content file protected under a non-interactive agreement (DMCA), such that skin **306***a* may not include a pause function, a stop function, a selector function, and/or a save function, etc. Another skin, e g , skin **306***b* may, in one embodiment, be configured to be utilized with a media content file protected under an interactive with "no save" agreement (DMCA), such that skin **306***b* may include a pause function, a stop function, a selector function, and for those media files having an interactive with "save" agreement, a save or a burn to CD function.

Still referring to FIG. **3**, it is further noted that in the present embodiment, each skin **306** can have a unique name and

signature. In one embodiment, skin **306** can be implemented, in part, through the utilization of an MD (message digest) 5 hash table or similar algorithm. An MD5 hash table can, in one implementation, be a check-sum algorithm. It is well known in the art that a skin, e.g., skin **306**, can be renamed and/or modified to incorporate additional features and/or functionalities in an unauthorized manner. Since modification of the skin would change the check sum and/or MD5 hash, without knowledge of the MD5 hash table, changing the name or modification of the skin may simply serve to disable the skin, in accordance with one embodiment of the present invention. Since copyright compliance mechanism (CCM) **300** verifies skin **306**, MD5 hash tables advantageously provide a deterrent against modifications made to the skin **306**.

In one embodiment, CCM **300** also includes one or more custom media device driver(s) **307** for providing an even greater measure of control over the media stream while increasing compliance reliability. A client computer system, (e.g., **210**), can be configured to utilize a custom media device application, (e.g., custom media device **310** of FIG. **5**B, **5**C, and **5**D), to control unauthorized recording of media content files. A custom media device application can be, but is not limited to, a custom media audio device application for media files having sound content, a custom video device application for media files having graphical and/or alphanumeric content, etc. In one embodiment, custom media device **310** of FIG. **5**B is an emulation of the custom media device driver **307**. With reference to audio media, the emulation is performed in a waveform audio driver associated with custom media device **310**. Driver **307** is configured to receive a media file being outputted by system **210** prior to the media file being sent to a media output device, (e.g., media output device **570**), and/or a media output application, (e.g., recording application **502**). Examples of a media output device includes, but is not limited to, a video card for video files, a sound card for audio files, etc. Examples of a recording application can include, but is not limited to, CD burner applications for writing to another CDs, ripper applications which capture the media file and change the format of the media file, e.g., from a CD audio file to an .mpeg audio file, and/or a .wav file, and/or an ogg vorbis file, and various other media formats. In one embodiment, client computer system **210** is configured with a custom media device driver **307** emulating custom media device **310**, and which is system **210**'s default device driver for media file output. In one embodiment, an existing GUI (graphical user interface) can be utilized or a GUI can be provided, e.g., by utilization of skin **306** or a custom web based player application or as part of a CCM **300** installation bundle, for forcing or requiring system **210** to have driver **307** as the default driver.

Therefore, when a media content file is received by system **210** from server **251**, the media content file is playable, provided the media content file passes through the custom media device application (e.g., **310** of FIG. **5**B), emulated from custom media device driver **307**, prior to being outputted. However, if an alternative media player application is selected, delivered media files from server **251** will not play on system **210**.

Thus, secured media player applications would issue a media request to the driver, (e.g., **307**), for the custom media device **310** which then performs necessary media input suppression, (e.g., waveform suppression for audio files), prior to forwarding the request to the default Windows™ media driver, (e.g., waveform audio driver for audio files).

Within FIG. **3** it is noted that requests for non-restricted media files can pass directly through custom media device driver **307** to a Windows™ waveform audio driver operable on system **210**, thus reducing instances of incompatibilities with existing media player applications that utilize waveform media, (e.g., audio, video, etc.). Additionally, media player applications that do not support secured media would be unaffected. It is further noted that for either secured media or non-restricted media, (e.g., audio media files), waveform input suppression can be triggered by other components of CCM **300**, (e.g., agents **304**, system hooks **305**, and skins **306**), or a combination thereof, to be active when a recording operation is initiated simultaneously with playback of secured media files, (e.g., audio files). Custom device drivers are well known and can be coded and implemented in a variety of ways including, but not limited to, those found at developers network web sites, (e.g., a Microsoft™ or alternative OS (operating system) developer web sites).

Advantageously, by virtue of system **210** being configured with a custom media device as the default device driver (e.g., **310** of FIGS. **5**B, **5**C, and **5**D), that is an emulation of a custom media device driver **307**, those media player applications that require their particular device driver to be the default driver, e.g., Total Recorder, etc., are rendered non-functional for secured media. Further advantageous is that an emulated custom media device provides no native support for those media player applications used as a recording mechanism, e.g., DirectSound capture, (direct sound **504** of FIGS. **5**A, **5**B, **5**C, and **5**D) etc., that are able to bypass user-mode drivers for most media devices. Additionally, by virtue of the media content being sent through device driver **307**, thus effectively disabling unauthorized saving/recording of media files, in one embodiment, media files that are delivered in a secured delivery system do not have to be encrypted, although, in another embodiment, they still may be encrypted. By virtue of non-encrypted media files utilizing less storage space and network resources than encrypted media files, networks having limited resources can utilize the functionalities of driver **307** of CCM **300** to provide compliance with copyright restrictions and/or licensing agreements applicable with a media content file without having the processing overhead of encrypted media files.

FIG. **4** is an illustration of an exemplary system **400** for implementing a copyright compliance mechanism in accordance with an embodiment of the present invention. Specifically, system **400** illustrates web server **250**, content server **251**, or a combination of web server **250** and content server **251** installing a copyright compliance mechanism (e.g., **300**) in a client's computer system (e.g., **210**) for controlling media file distribution and controlling user access and interaction of copyrighted media files, in one embodiment of the present invention.

Client computer system **210** can communicatively couple with a network (e.g., **200**) to request a media file, a list of available media files, or a play list of audio files, e.g., MP3 files, etc. In response, web server **250** determines if the request originates from a registered user authorized to receive media files associated with the request. If the user is not registered with the network, web server **250** can initiate a registration process with the requesting client **210**. Client registration can be accomplished in a variety of ways. For example, web server **250** may deliver to a client **210** a registration form having various text entry fields into which the user can enter required information. A variety of information can be requested from the user by web server **250** including, but not limited to, user's name, address, phone number, credit card number, online payment account number, biometric identification (e.g., fingerprint, retinal scan, etc.),verifiable email address, and the like. In addition, registration can, in one embodiment, include the user selecting a username and password.

Still referring to FIG. **4**, web server **250** can, in one embodiment, detect information related to the client's computer system **210** and store that information in a user/media database **450**. For example, web server **250** can detect a unique identifier of client computer system **210**. In one embodiment, the unique identifier can be the MAC address of a NIC (network interface card) of client computer system **210** or the MAC address of the network interface adapter integrated on the motherboard of system **210**. It is understood that a NIC enables a client computer system **210** to access web server **250** via a network such as Internet **201**. It is well known that each NIC typically has a unique identifying number MAC address. Further, web server **250** can, in one embodiment, detect and store (also in database **450**) information regarding the types(s) of media player application(s), e.g., Windows Media Player™, Real Player™, iTunes player™ (Apple), Live 365™ player, and those media player applications having recording functionality, (e.g., Total Recorder, Cool Edit 2000, Sound Forge, Sound Recorder, Super MP3 Recorder, and the like), that are present and operable in client computer system **210**. In one embodiment, the client information is verified for accuracy and is then stored in a user database (e.g., **450**) within web server **250**.

Subsequent to registration completion, creation of the user ID and password, and obtaining information regarding client computer system **210**, all or part of this information can be installed in client computer system **210**. In one embodiment, client computer system **210** information can be in the form of a cookie. Web server **250** then verifies that the user and client computer system **210** data is properly installed therein and that their integrity has not been compromised. Subsequently, web server **250** installs a copyright compliance mechanism (e.g., **300**) into the client's computer system, e.g., **210**, in one embodiment of the present invention. It is noted that web server **250** may not initiate installation of CCM **300** until the user ID, password, and client computer system **210** information is verified. A variety of common techniques can be employed to install an entire CCM **300**, portions of its components, entire components, and/or combinations or a function of its components. For example, copyright compliance mechanism **300** can be installed in a hidden directory within client computer system **210**, thereby preventing unauthorized access to it. In one embodiment, it is noted that unless CCM **300** is installed in client computer system **210**, its user will not be able to request, access, or have delivered thereto, media files stored by web server **250** and/or content server **251**.

Referring still to FIG. **4**, upon completion of client registration and installation of CCM **300**, client computer system **210** can then request a media play list or a plurality of play lists, etc. In response, web server **250** determines whether the user of client computer system **210** is authorized to receive the media play list associated with the request. In one embodiment, web server **250** can request the user's username and password. Alternatively, web server **250** can utilize user database **450** to verify that computer **210** is authorized to receive a media play list. If client computer **210** is not authorized, web server **250** can initiate client registration, as described herein. Additionally, web server **250** can disconnect computer **210** or redirect it to an alternative web site. Regardless, if the user and client computer system **210** are not authorized, web server **250** will not provide the requested play list to client computer system **210**.

However, if client computer system **210** is authorized, web server **210** can check copyright compliance mechanism **300** within data base **450** to determine if it, or any of the components therein, have been updated since the last time client computer system **210** logged in to web server **250**. If a component of CCM **300** has been updated, web server **250** can install the updated component and/or a more current version of CCM **300** into client computer system **210**, e.g., via Internet **201**. If CCM **300** has not been updated, web server **250** can then deliver the requested media play list to system **210** via Internet **201** along with an appended user key or user identification (ID). It is noted that user database **450** can also include data for one or more media play lists that can be utilized to provide a media play list to client computer system **210**. Subsequently, the user of client computer system **210** can utilize the received media play list in combination with the media player application operating on system **210** to transmit a delivery request for one or more desired pieces of media content from web server **250**. It is noted that the delivery request contains the user key for validation purposes.

Still referring to FIG. **4**, upon receiving the media content delivery request, web server **250** can then check the validity of the requesting media application and the attached user key. In one embodiment, web server **250** can utilize user database **450** to check their validity. If either or both are invalid, web server **250**, in one embodiment, can redirect unauthorized client computer system **210** to an alternative destination to prevent abuse of the system. However, if both the requesting media application and the user key are valid, CCM **300** verifies that skins **306** are installed in client computer system **210**. Additionally, CCM **300** further verifies that system hook(s) **305** have been run or are running to govern certain functions of those media player applications operable within client computer system **210** that are known to provide non-compliance with one or more restricted use standards such as the DMCA and/or the RIAA. Additionally, CCM **300** further diverts and/or redirects certain pathways that are commonly used for recording, e.g., driver **307** of FIG. **5**A, device **310** of FIG. **5**B, device **570** of FIG. **5**C, and driver **505** of FIG. **5**D. Once CCM **300** has performed the above described functions, web server **250** then, in one embodiment, issues to the client computer **210** a redirect command to the current address location of the desired media file content along with an optional time sensitive access key, e.g., for that hour, day, or other defined timeframe.

In response to the client computer system **210** receiving the redirect command from web server **250**, the media player application operating on client computer system **210** automatically transmits a new request and the time sensitive access key to content server **251** for delivery of one or more desired pieces of media content. The validity of the time sensitive access key is checked by content server **251**. If invalid, unauthorized client computer **210** is redirected by content server **250** to protect against abuse of the system and unauthorized access to content server **251**. If the time sensitive access key is valid, content server **251** retrieves the desired media content from content database **451** and delivers it to client computer system **210**. It is noted that, in one embodiment, the delivered media content can be stored in hidden directories and/or custom file systems that may be hidden within client computer system **210** thereby preventing future unauthorized distribution. In one embodiment, an HTTP (hypertext transfer protocol) file delivery system is used to deliver the requested media files, meaning that the media files are delivered in their entirety to client computer system **210**, as compared to streaming media which delivers small portions of the media file.

Still referring to FIG. **4**, it is noted that each media file has had, in one embodiment, a header attached therewith prior to delivery of the media file. In one embodiment, the header can contain information relating to the media file, e.g., title or media ID, media data such as size, type of data, and the like.

The header can also contain a sequence or key that is recognizable to copyright compliance mechanism **300** that identifies the media file as originating from a content server **251**. In one embodiment, the header sequence/key can also contain instructions for invoking the licensing agreements and/or copyright restrictions that are applicable to that particular media file.

Additionally, if licensing agreements and/or copyright restrictions are changed, developed, or created, or if new media player applications, with or without recording functionality, are developed, CCM **300** has appropriate modifications made to portions of components, entire components, combinations of components, and/or the entire CCM **300** to enable continued compliance with licensing agreements and/or copyright restrictions. Furthermore, subsequent to modification of copyright compliance mechanism **300**, modified portions of, or the entire updated CCM **300** can be installed in client computer system **210** in a variety of ways. For example, the updated CCM **300** can be installed during client interaction with web server **250**, during user log-in, and/or while client computer system **210** is receiving the keyed play list.

Referring still to FIG. **4**, it is further noted that, in one embodiment, the media files and attached headers can be encrypted prior to being stored within content server **251**. In one embodiment, the media files can be encrypted utilizing randomly generated keys. Alternatively, variable length keys can be utilized for encryption. It is noted that the key to decrypt the encrypted media files can be stored in database **450**, content database **451** or in some combination of databases **450** and **451**. It is further noted that the messages being passed back and forth between client computer system **210** and web server **250** can also be encrypted, thereby protecting the media files and the data being exchanged from unauthorized use or access. There are a variety of encryption mechanisms and programs that can be implemented to encrypt this data including, but not limited to, exclusive OR, shifting with adds, public domain encryption programs such as Blowfish, and non-public domain encryption mechanisms. It is also noted that each media file can be uniquely encrypted, such that if the encryption code is cracked for one media file, it is not applicable to other media files. Alternatively, groups of media files can be similarly encrypted. Furthermore, in another embodiment, the media files may not be encrypted when being delivered to a webcaster known to utilize a proprietary media player application, e.g., custom media device driver **307**.

Subsequent to media file decryption, the media file may be passed through CCM **300**, (e.g., coder/decoder **303**), to a media player application operating on client computer system **210**, e.g. playback application **501** of FIGS. **5**A, **5**B, **5**C, **5**D, and **6**), which can then access and utilize the delivered high fidelity media content, enabling its user(s) to experience the media content, e.g., listen to it, watch it, view it, or the like. In one embodiment of the present invention, a specialized or custom media player may or may not be required to experience the media content, (e.g., skin **306** of FIG. **3**). A skin **306** may be necessary when CCM **300** cannot modify an industry standard media player application to comply with copyright restrictions and/or licensing agreements in accordance with the DMCA. Alternatively, an industry standard media player can be utilized by client computer system **210** to experience the media content. Typically, many media player applications are available and can include, but are not limited to, Windows™ Media Player™ for PCs (personal computers), iTunes™ Player or QuickTime™ for Apple computers, and XMMS player for computers utilizing a Linux operating system. Regardless of the media player application utilized, while the media file is passed to the media player application, e.g., in a frame by frame basis or in a buffer, coder/decoder **303** will repeatedly ensure that CCM **300** rules are being enforced at any particular moment during media playback, shown as step **750** of FIG. **7**C.

As the media file content is delivered to the media player application, periodically, (e.g., after a specified number of frames, after a defined period of time, or any desired time or data period), coder/decoder **303** repeatedly determines whether or not all the rules, as defined by CCM **300**, are enforced. If the rules are not enforced, (e.g., a user opening up a recording application such as Total Recorder or an alternative application, the presentation of the media content is, in one embodiment, suspended or halted. In another embodiment, the presentation of the media content can be modified to output the media content in a non-audibly, (e.g., silence). In yet another embodiment, the media content may be audible but recording functionality can be disabled, such that the media content cannot be recorded. These presentation stoppages are collectively shown as step **751** of FIG. **7**C.

If the rules, in accordance with CCM **300**, are enforced, the codec/decoder **303** retrieves a subsequent portion of the media content that is stored locally in client computer system **210**. The newly retrieved portion of the media file is then presented by the client's media player application. While the newly retrieved portion is presented, CCM **300** then again checks that the rules are enforced, and retrieves an additional portion of the media file or suspends presentation of the media file if the rules are not being enforced. These operations are performed repeatedly throughout the playback of the media file, in a loop environment, until the media file's contents have been presented in their entirety. Advantageously, by constantly monitoring during playing of media files, CCM **300** can detect undesired activities and enforces those rules as defined by CCM **300**.

FIG. **5**A is an exemplary logic/bit path block diagram **500**A showing utilization of a wave shim driver, (e.g., wave shim driver **309** of FIG. **3**), in conjunction with copyright compliance mechanism **300**, for selectively controlling recording of copyrighted media received by a client computer system, (e.g., system **210**), in one embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, installed and operational on client system **210** in the manner described herein.

In one embodiment, a copyright compliance mechanism **300** is shown as being communicatively coupled with a media playback application **501** via coupling **520**. Therefore, CCM **300** is enabled to communicate with playback application **501**. In one embodiment, CCM **300** can be integrated into a media playback application. CCM **300** is also coupled to and controls a selectable switch **311** in wave shim driver **309** (as described in FIG. **3**) via coupling **522**. CCM **300** is further coupled to and controls a selectable switch **511** in direct sound **504** via coupling **521**. Depending upon the copyright restrictions and licensing agreements applicable to an incoming media file, (e.g., **499**), CCM **300** controls whether switches **311** and **511** are open (shown), thus preventing incoming media **499** from reaching a media recording application, or closed (not shown) to allow recording of incoming media **499**.

For example, incoming media **499** may originate from a content server, (e.g., **251**, coupled to system **210**). In another example, incoming media **499** may originate from a personal recording/electronic device, (e.g., a MP3 player/recorder or similar device, coupled to system **210**). Alternatively, incoming media **499** may originate from a magnetic, optical or alternative media storage device inserted into a media device

player coupled to system **210**, (e.g., a CD or DVD inserted into a CD or DVD player), a hard disk in a hot swappable hard drive, an SD (secure digital card) inserted into a SD reader, and the like. In yet another example, incoming media **499** may originate from another media player application or media recording application. Incoming media **499** may also originate from, but is not limited to, a satellite radio feed (e.g., XM radio), a personal communication device (e.g., a mobile phone), a cable television radio input ,(e.g., DMX (digital music express)), a digital distribution and/or a public presentation source via a network, Internet or other communication connection, pay-per-view and/or pay-per-play system, or a set-top box. It is noted that incoming media **499** can originate from nearly any source that can be coupled to system **210**. However, regardless of the source of incoming media **499**, embodiments of the present invention, described herein, can prevent unauthorized recording of the media **499**.

FIG. **5**A shows a media playback application **501**, (e.g., an audio, video, or other media player application), operable within system **210** and configured to receive incoming media **499**. Playback application **501** can be a playback application provided by an operating system, (e.g., Media Player for Windows™ by Microsoft), a freely distributed playback application downloadable from the Internet, (e.g., RealPlayer or LiquidAudio), a playback application provided by a webcaster, (e.g., PressPlay), or a playback application commercially available.

Media device driver **505** which, in one embodiment, may be a software driver for a sound card coupled to system **210** having a media output device **570**, e.g., speakers or headphones, coupled therewith for media files having audio content. In another implementation, media device driver **505** may be a software driver for a video card coupled with a display device, (e.g., **105**), for displaying media files having alphanumeric and/or graphical content, and so on. With reference to audio files, it is well known that a majority of recording applications assume a computer system, (e.g., **210**), has a sound card disposed therein, providing full-duplex sound functionality to system **210**. This means media output driver **505** can simultaneously cause playback and recording of incoming media files **499**. For example, media device driver **505** can playback media **499** along wave-out line **539** to media output device **570** (e.g., speakers for audible playback) via wave-out line **580** while outputting media **499** on wave-out line **540** to eventually reach recording application **502**.

For purposes of FIGS. **5**A, **5**B, **5**C, and **5**D, the terms wave-in line and wave-out line are referenced from the perspective of media device driver **505**. Additionally, for the most part, wave-in lines are depicted downwardly and wave-out lines are depicted upwardly in FIGS. **5**A, **5**B, **5**C, and **5**D.

Continuing with FIG. **5**A, playback application **501** is coupled with an operating system (O/S) multimedia subsystem **503** and direct sound **504** via wave-in lines **531** and **551** respectively. O/S multimedia subsystem **503** is coupled to a wave shim driver **309** via wave-in line **533** and wave-out line **546**. O/S multimedia subsystem **503** is also coupled to a recording application **502** via wave-out line **548**. Operating system (O/S) multimedia subsystem **503** can be any O/S multimedia subsystem, e.g., a Windows™ multimedia subsystem for system **210** operating under a Microsoft O/S, a QuickTime™ multimedia subsystem for system **210** operating under an Apple O/S, and so on. Playback application **501** is also coupled with direct sound **504** via wave-in line **551**.

Direct sound **504**, in one embodiment, may represent access to a hardware acceleration feature in a standard audio device, enabling lower level access to components within media device driver **505**. In another embodiment, direct sound **504** may represent a path that can be used by a recording application, (e.g., Total Recorder), that can be further configured to bypass the default device driver, (e.g., media device driver **505**), to capture incoming media **499** for recording. For example, direct sound **504** can be enabled to capture incoming media **499** via wave-in line **551** and unlawfully output media **499** to a recording application **502** via wave-out line **568**, as well as media **499** eventually going to media device driver **505**, the standard default driver.

Still referring to FIG. **5**A, wave shim driver **309** is coupled with media device driver **505** via wave-in line **537** and wave-out line **542**. Media device driver **505** is coupled with direct sound **504** via wave-in line **553** which is shown to converge with wave-in line **537** at media device driver **505**. Media device driver **505** is also coupled with direct sound **504** via wave-out line **566**.

Wave-out lines **542** and **566** are shown to diverge from wave-out line **540** at media device driver **505** into separate paths. Wave-out line **542** is coupled to wave shim driver **309** and wave-out line **566** is coupled to direct sound **504**. When selectable switch **311** and **511** are open (shown), incoming media **499** cannot flow to recording application **502**, thus preventing unauthorized recording of it.

For example, incoming media **499** is received at playback application **501**. Playback application **501** activates and communicates to CCM **300** regarding copyright restrictions and/or licensing agreements applicable to incoming media **499**. If recording restrictions apply to media **499**, CCM **300** can, in one embodiment, open switches **311** and **511**, thereby blocking access to recording application **502** to effectively preventing unauthorized recording of media **499**. In one embodiment, CCM **300** can detect if system **210** is configured with direct sound **504** selected as the default driver to capture incoming media **499**, via wave-in line **551**, or a recording application is detected and/or a hardware accelerator is active, such that wave driver shim **309** can be bypassed by direct sound **504**. Upon detection, CCM **300** can control switch **511** such that the output path, wave-out line **568**, to recording application **502** is blocked. It is further noted that CCM **300** can detect media recording applications and devices as described herein, with reference to FIG. **3**.

Alternatively, if media device driver **505** is selected as the default driver, incoming media **499** is output from playback application **501** to O/S multimedia subsystem **503** via wave-in line **531**. From subsystem **503**, media **499** is output to wave shim driver **309** via wave-in line **533**. The wave shim driver **309** was described herein with reference to FIG. **3**. Media **499** is output from wave shim driver **309** to media device driver **505** via wave-in line **537**. Once received by media device driver **505**, media **499** can be output via wave-out line **539** to a media output device **570** coupled therewith via wave-out line **580**. Additionally, media device driver **505** can simultaneously output media **499** on wave-out line **540** back to wave shim driver **309**. Dependent upon recording restrictions applicable to media **499**, CCM **300** can, in one embodiment, close switch **311** (not shown as closed), thereby allowing media **499** to be output from wave shim driver **309** to subsystem **503** (via wave-out line **546**) and then to recording application **502** via wave-out line **548**. Alternatively, CCM **300** can also open switch **311**, thereby preventing media **499** from reaching recording application **502**.

It is particularly noted that by virtue of CCM **300** controlling both switches **311** and **511**, and therefore controlling wave-out line **548** and wave-out line **568** leading into recording application **502**, incoming media files, (e.g., media **499**), can be prevented from being recorded in an unauthorized manner in accordance with applicable copyright restrictions

and/or licensing agreements related to the incoming media **499**. It is also noted that embodiments of the present invention in no way interfere with or inhibit the playback of incoming media **499**.

FIG. **5**B is an exemplary logic/bit path block diagram **500**B of a client computer system, (e.g., **210**), configured with a copyright compliance mechanism **300** for preventing unauthorized recording of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in the manner described herein with reference to FIGS. **4**, **5**A, **5**C, **5**D, **6**, and **7**.

Diagram **500**B of FIG. **5**B is similar to diagram **500**A of FIG. **5**A, with a few changes. Particularly, diagram **500**B includes a custom media device **310** communicatively interposed between and coupled to O/S multimedia subsystem **503** and wave shim driver **309**. Custom media device **310** is coupled to O/S multimedia subsystem via wave-in line **533** and wave-out line **546**. Custom media device **310** is coupled with wave shim driver **309** via wave-in line **535** and wave-out line **544**. Additionally, custom media device **310** is coupled with direct sound **504** via wave-in line **553** which converges with wave-in line **533** and wave-out line **566** which diverges from wave-out line **546**, in one embodiment.

Diagram **500**B also includes a media hardware output device **570** that is coupled to media device hardware driver **505** via line **580**. Media hardware output device **570** can be, but is not limited to, a sound card for audio playback, a video card for video, graphical, alphanumeric, etc, output, and the like.

In one embodiment, CCM **300** is communicatively coupled with playback application **501** via coupling **520**, waveform driver shim **309** via coupling **522**, and custom media device **310** via coupling **525**. CCM **300** is coupled to and controls a selectable switch **311** in waveform driver shim **309** via coupling **522**. CCM **300** is also coupled to and controls a selectable switch **312** in custom audio device **310** via coupling **525**. Depending upon the copyright restrictions and licensing agreements applicable to an incoming media file, (e.g., media **499**), CCM **300** controls whether switches **311** and **312** are open (shown), thus preventing the incoming media **499** from reaching a recording application, or closed (not shown) so as to allow recording of the incoming media **499**.

Continuing with FIG. **5**B, direct sound **504** is shown coupled with custom media device **310** via wave-in line **553**, instead of being coupled with media device driver **505** (FIG. **5**A). In one embodiment, custom audio device **310** mandates explicit selection through system **210**, meaning that custom audio device **310** needs to be selected as a default driver of system **210**. By virtue of having the selection of custom media device **310** as the default driver of system **210**, the data path necessary for direct sound **504** to capture the media content can be selectively closed.

For example, incoming media **499** originating from nearly any source described herein with reference to FIG. **5**A is received by media playback application **501** of system **210**. Playback application **501** communicates to CCM **300**, via coupling **520**, to determine whether incoming media **499** is protected by any copyright restrictions and/or licensing agreements. Playback application **501** communicates with CCM **300** to control switch **311** and **312** accordingly. For example, if recording of incoming media **499** would violate applicable restrictions and/or agreements, and therefore switch **312** is in an open position (as shown), such that the output path to recording application **502**, (e.g., wave-out line **548** and/or wave-out line **568**), is effectively blocked, thereby preventing unauthorized recording of media **499**.

Alternatively, if media device driver **505** is selected as the default driver, incoming media **499** continues from O/S multimedia subsystem **503**, through custom media device **310**, wave driver shim **309**, and into media device driver **505** where media **499** can be simultaneously output to media output device **570** via line **580**, and output on wave-out line **540** and outputted by media device driver **505** to wave shim driver **309** on wave-out line **542**. However, by virtue of CCM **300** controlling switch **311**, wave-out line **544** which eventually leads to recording application **502** is blocked, thus effectively preventing unauthorized recording of media **499**.

It is particularly noted that by virtue of CCM **300** controlling both switches **311** and **312** and therefore controlling wave-out line **548** and wave-out line **568**, any incoming media files, e.g., incoming media **499**, can be prevented from being recorded in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media **499**.

Still referring to FIG. **5**B, it is further noted that custom media device **310** allows for unfettered playback of incoming media **499**. Additionally, at any time during playback of media **499**, custom media device **310** can be dynamically activated by CCM **300**.

FIG. **5**C is an exemplary logic/bit path block diagram **500**C of a client computer system, (e.g., **210**), configured with a copyright compliance mechanism **300** for preventing unauthorized output and unauthorized recording of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in the manner described herein with reference to FIGS. **4**, **5**A, **5**B, **5**D, **6**, and **7**.

Diagram **500**C of FIG. **5**C is similar to diagram **500**B of FIG. **5**B, with a few changes. Particularly, media hardware output device **570** that is coupled with a media device driver **505**. In one embodiment, media hardware output device **570** is shown to include a switch **571** controlled by CCM **300** via communication line **523**, similar to switches **311** and **312**, for controlling output of incoming media **499**. Diagram **500**C includes media hardware output device **570** that is coupled with media device driver **505**. In one embodiment media hardware output device **570** can be a S/PDIF (Sony/Phillips Digital Interface) card for providing multiple outputs, (e.g., an analog output **573** and a digital output **575**). An alternative media hardware output device providing similar digital output can also be implemented as device **570** including, but not limited to, a USB (universal serial bus) output device and/or an externally accessible USB port located on system **210**, a FireWire (IEEE1394) output device and/or an externally accessible FireWire port located on system **210**, with wireline or wireless communication functionality.

In one embodiment, CCM **300** is communicatively coupled with playback application **501** via coupling **520**, waveform driver shim **309** via coupling **522**, custom media device **310**, via coupling **525**, and media hardware output device **570** via coupling **523**. CCM **300** is coupled to and controls a selectable switch **311** in waveform driver shim **309** via coupling **522**. CCM **300** is also coupled to and controls a selectable switch **312** in custom audio device **310** via coupling **525**. CCM **300** is further coupled to and controls a selectable switch **571** in media hardware output device **570** via connection **523**. Depending upon the copyright restrictions and licensing agreements applicable to an incoming media file, (e.g., media **499**), CCM **300** controls whether switches **311** and **312** are open (shown), thus preventing the

incoming media **499** from reaching a recording application, or closed (not shown) so as to allow recording of the incoming media **499**. Additionally, CCM **300** controls whether switch **571** is open (shown), thus preventing incoming media **499** from being output from digital output **575** of media hardware output device **570**, or closed (not shown) to allow incoming media **499** to be output from media hardware output device **570**.

By controlling media hardware output device **570**, copyright compliance mechanism **300** can prevent unauthorized output of incoming media **499** to, e.g., a digital recording device that may be coupled with digital output **575** of media hardware output device **570**. Accordingly, in one embodiment, CCM **300** is enabled to also detect digital recording devices that may be coupled to a digital output line, e.g., **575**, of a media hardware output device, (e.g., **570**). Examples of a digital recording device that can be coupled to media hardware output device **570** includes, but is not limited to, mini-disc recorders, MP3 recorders, personal digital recorders, digital recording devices coupled with multimedia systems, personal communication devices, set-top boxes, and/or nearly any digital device that can capture an incoming media **499** being output from a media hardware output device **570**, (e.g., a sound card, a video card, etc.).

Within FIG. **5**C, direct sound **504** is shown coupled with custom media device **310** via wave-in line **553**, instead of being coupled with media device driver **505** (FIG. **5**A). In one embodiment, custom audio device **310** mandates explicit selection through system **210**, meaning that custom audio device **310** is needs to be selected as a default driver of system **210**. By virtue of having the selection of custom media device **310** as the default driver of system **210**, the data path necessary for direct sound **504** to capture the media content can be selectively closed.

For example, incoming media **499** originating from nearly any source with reference to FIG. **5**A is received by media playback application **501** of system **210**. Playback application **501** communicates to CCM **300**, via coupling **520**, to determine whether incoming media **499** is protected by any copyright restrictions and/or licensing agreements. Playback application **501** communicates with CCM **300** to control switch **311**, **312**, and **571** accordingly. In the present example, recording of incoming media **499** would violate applicable restrictions and/or agreements and therefore switch **312** is in an open position, such that the output path to recording application **502**, (e.g., wave-out line **548** and/or wave-out line **568**), is effectively blocked, thereby preventing unauthorized recording of media **499**.

Alternatively, if media device driver **505** is selected as the default driver, incoming media **499** continues from O/S multimedia subsystem **503**, through custom audio device **310**, wave driver shim **309**, and into media device driver **505** where media **499** can be simultaneously output to media output device **570** via line **580**, and output on wave-out line **540** to wave-and outputted by media device driver **505** to wave shim driver **309** on wave-out line **542**. However, by virtue of CCM **300** controlling switch **311**, wave-out line **544** which eventually leads to recording application **502** is blocked, thus effectively preventing unauthorized recording of media **499**.

It is noted that by virtue of CCM **300** controlling both switches **311** and **312** and therefore controlling wave-out line **548** and wave-out line **568**, any incoming media files, (e.g., incoming media **499**), can be prevented from being recording in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media.

Still referring to FIG. **5**C, it is particularly noted that although CCM **300** can prevent unauthorized recording of incoming media **499** by controlling switches **311** and **312**, thus preventing incoming media **499** from reaching recording application **502**, controlling switches **311** and **312** do nothing to prevent incoming media **499** from being captured by a peripheral digital device, (e.g., a mini-disc recorder), etc., coupled to a digital output **575** of device **570**. Thus, by also controlling the output, via digital output **575** of media hardware output device **570**, through control via switch **571**, CCM **300** can prevent unauthorized capturing of incoming media **499** from output **575**, (e.g., on a sound card for audio files, a video card for video and/or graphical files), regardless of whether incoming media **499** is received in a secure and encrypted manner. However, when switch **571** is in a closed position, incoming media **499** may be played back in an unfettered manner. Additionally, at any time during playback of media **499**, switch **312** of custom media device **310**, switch **311** of media device driver **309**, and/or switch **571** of media hardware output device **570** can be dynamically activated by CCM **300**.

FIG. **5**D is an exemplary logic/bit path block diagram **500**D of a client computer system, (e.g., **210**), configured with a copyright compliance mechanism **300** for preventing unauthorized kernel based output and unauthorized recording of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in the manner described herein with reference to FIGS. **4**, **5**A, **5**B, **5**C, **6**, and **7**.

Diagram **500**D of FIG. **5**D is similar to diagram **500**C of FIG. **5**C, with some changes. Particularly, diagram **500**D includes a kernel streaming mechanism **515**, (e.g., DirectKS), that is coupled with a media device driver **505**. In one embodiment, DirectKS **515** can be used for establishing a direct connection with media device driver **505**. In the present embodiment, media device driver **505** is shown to include a switch **511** controlled by CCM **300** via communication line **524**, that is similar to switches **311**, **312**, and **571**, for controlling output of incoming media **499**.

In one embodiment, CCM **300** is communicatively coupled with playback application **501** via coupling **520**, waveform driver shim **309** via coupling **522**, custom media device **310**, via coupling **525**, and media device driver **505** via coupling **524**. Specifically, CCM **300** is coupled to and controls a selectable switch **311** of waveform driver shim **309** via coupling **522**. CCM **300** is also coupled to and controls a selectable switch **312** of custom audio device **310** via coupling **521**. CCM **300** is further coupled to and controls a selectable switch **511** in media device driver **505** via coupling **524**. Depending upon the copyright restrictions and/or licensing agreements applicable to an incoming media file, e.g., (e.g., media **499**), CCM **300** controls whether switches **311** and **312** are open (shown), thus preventing the incoming media **499** from reaching a recording application, or closed (not shown) so as to allow recording of the incoming media **499**. Additionally, CCM **300** controls whether switch **511** is open (shown), thus preventing incoming media **499** from being returned from media device driver **505** to DirectKS **515** which can capture incoming media **499** and redirect it to recording application **502** to create an unauthorized copy or recording of incoming media **499**. CCM **300** can also control whether switch **511** is closed (not shown) to allow DirectKS **515** to capture and redirect incoming media **499** to recording application **502**.

DirectKS **515**, in one embodiment, may represent a kernel streaming mechanism that is adapted to establish a direct

connection with a media device driver **505** of an operating system operable on client computer system **210**, enabling kernel level access to media device driver **505**. A kernel streaming mechanism can be implemented for the purpose of precluding utilization of standard audio APIs (application programming interfaces) to play or record media content, with particular attention paid to those playback applications with low latency requirements. DirectKS **515** can bypass existing APIs and communicate with media device driver **505**. DirectKS **515** can be readily adapted to work in conjunction with a playback application, (e.g., **501**), via coupling **581** to capture and redirect incoming media **499** and redirect it to driver **505** via coupling **583** and then to recording application **502**, via wave-out line **588**. Accordingly, DirectKS **515** can be implemented to create unauthorized media recordings.

By controlling media device driver **505**, copyright compliance mechanism **300** can prevent unauthorized output of incoming media **499** to, e.g., a digital recording device **529** that may be coupled with recording application **502**. In one embodiment, media device driver **505** is configured through the kernel mixer (not shown) to control the data path. Additionally, in one embodiment, CCM **300** is enabled to also detect a kernel streaming mechanism **515** (e.g., DirectKS) that may be operable on client computer system **210**, as described herein with reference to FIG. **3**.

In one embodiment, custom media device **310** mandates explicit selection through system **210**, meaning that custom media device **310** is selected as a default driver of system **210**. By virtue of having the selection of custom media device **310** as the default driver of system **210**, the data path necessary for direct sound **504** to capture the media content is selectively closed.

For example, incoming media **499** originating from nearly any source described herein with reference to FIG. **5**A is received by media playback application **501** of system **210**. Playback application **501** communicates to CCM **300**, via connection **520**, to determine whether incoming media **499** is protected by any copyright restrictions and/or licensing agreements. Playback application **501** communicates with CCM **300** to control switches **311**, **312**, **571**, and **511**, accordingly. In the present example, recording of incoming media **499** would violate applicable restrictions and/or agreements and therefore switch **511** is in an open position, such that the output path to recording application **502**, (e.g., wave-out line **548** and/or wave-out line **568** and/or wave-out line **588**), is effectively blocked, thereby preventing unauthorized recording of media **499**.

Still referring to FIG. **5**D, it is particularly noted that although CCM **300** can prevent unauthorized recording of incoming media **499** by controlling switches **311**, **312**, and **571**, thus preventing incoming media **499** from reaching recording application **502**, controlling switches **311**, **312**, and **571**, do nothing to prevent incoming media **499** from being returned to recording application **502** by a kernel streaming mechanism **515** (e.g., DirectKS), which enables capturing and redirecting of incoming media **499** to recording application **502**, via wave-out line **588**. Thus, by also controlling switch **511** of media device driver **505**, CCM **300** can prevent kernel streaming mechanism **515** from returning incoming media **499** to recording application **502**, thereby preventing incoming media **499** from being captured and redirected to recording application **502** in an attempt to create and unauthorized copy and/or recording of incoming media **499**. However, when switch **511** is in a closed position, incoming media **499** may be returned to a recording application **502**, such that recording could be possible, provided recording does not violate copyright restrictions and/or licensing agreements applicable to incoming media **499**. Additionally, at any time during playback of media **499**, switch **312** of custom media device **310**, switch **311** of wave shim driver **309**, and/or switch **511** of media device driver **505** can be dynamically activated by CCM **300**.

FIG. **6**A is an block diagram of a media file, (e.g., incoming media **499**), adapted to be received by a playback application, (e.g., **501** of FIGS. **5**A, **5**B, **5**C, and **5**D), configured with an indicator **605** for enabling incoming media **499** to comply with rules according to the SCMS (serial copy management system). When applicable to a media file, (e.g., **499**), the SCMS allows for one copy of a copyrighted media file to be made, but not for copies of copies to be made. Thus, if incoming media **499** can be captured by a recording application, (e.g., **502** of FIGS. **5**A, **5**B, **5**C, and/or **5**D), and/or a recording device, (e.g. **529**), and/or a peripheral recording device and/or a recording application coupled to a digital output of a media hardware output device, (e.g., digital output **575** of media hardware output device **570** of FIGS. **5**B, **5**C), and **5**D, and/or a kernel streaming mechanism **515**, (e.g., DirectKS of FIG. **5**D), unauthorized copying and/or recording may be accomplished.

Playback application **501** is coupled with CCM **300** via communication line **520** in a manner analogous to FIGS. **5**A, **5**B, **5**C, and/or **5**D. Although not shown in FIG. **6**, it is noted that CCM **300** is also coupled to switches **311** and **511** as shown in FIG. **5**A, switches **311** and **312** in FIG. **5**B, switches **311**, **312**, and **571** in FIG. **5**C, and switches **312**, **311**, **571**, and **511**, in FIG. **5**D.

In one embodiment, an indicator **605** is attached to incoming media **499** for preventing unauthorized copying or recording in accordance with the SCMS. In one embodiment, indicator **605** can be a bit that may be transmitted prior to beginning the delivery of incoming media **499** to playback application **501**. In another embodiment, indicator **605** may be placed at the beginning of the bit stream of incoming media **499**. In yet another embodiment, indicator **605** may be placed within a frame period of incoming media **499**, (e.g., every fifth frame), or any other desired frame period. In another embodiment, indicator **605** may be transmitted at a particular time interval or intervals during delivery of the media file, (e.g. incoming media **499**). Thus, indicator **605** may be placed nearly anywhere within or attached to the bit stream related to incoming media **499**.

Within FIG. **6**, indicator **605** may be comprised of various indicators, (e.g., a level 0 indicator, a level 1 indicator, and a level 2 indicator), in one embodiment of the present invention. In the present embodiment, a level 0 indicator may be for indicating to CCM **300** that copying is permitted without restriction, (e.g., incoming media **499** is not copyrighted or that the copyright is not asserted). In the present embodiment, a level 1 indicator may be for indicating to CCM **300** that one generation of copies of incoming media **499** may be made, such that incoming media **499** is an original copy and that one copy may be made. In the present embodiment, a level 2 indicator may be for indicating to CCM **300** that incoming media **499** is copyright protected and/or a copy thereof, and as such no digital copying is permitted.

For example, incoming media **499** is received by playback application **501**. Application **501** detects an indicator **605** attached therewith, in this example, a level 2 bit is placed in the bit stream for indicating to CCM **300** that copying is not permitted. As such, when CCM **300** is configured in system **210** such as that shown in FIG. **5**A, in response to a level 2 indicator bit, CCM **300**, while controlling the audio path, then activates switches **311** and **511** to prevent any recording of incoming media **499**.

However, CCM **300** is configured in system **210** such as that shown in FIG. **5**B, in response to a level 2 indicator bit, CCM **300**, while controlling the media path, then activates switches **311** and **312** to prevent any recording of incoming media **499**.

Alternatively, when CCM **300** is configured in system **210** such as that shown in FIG. **5**C, in response to a level 2 indicator bit, CCM **300**, while controlling the media path, then activates switches **311**, **312**, and **571** to prevent any recording of incoming media **499**.

It is noted that CCM **300** can activate or deactivate switches coupled therewith, as described herein with reference to FIGS. **5**A-**5**D, thereby funneling incoming media **499** through the secure media path, in this instance the audio path, to prevent unauthorized copying of incoming media **499**. It is further noted that CCM **300** can detect media recording applications and devices as described herein, with reference to FIG. **3**.

FIGS. **7**A, **7**B, and **7**C, are a flowchart **700** of steps performed in accordance with one embodiment of the present invention for controlling end user interaction of delivered electronic media. Flowchart **700** includes processes of the present invention which, in some embodiments, are carried out by processors and electrical components under the control of computer readable and computer executable instructions. The computer readable and computer executable instructions reside, for example, in data storage features such as computer usable volatile memory **104** and/or computer usable non-volatile memory **103** of FIG. **1**. However, the computer readable and computer executable instructions may reside in any type of computer readable medium. Although specific steps are disclosed in flowchart **700**, such steps are exemplary. That is, the present embodiment is well suited to performing various other steps or variations of the steps recited in FIGS. **7**A, **7**B, and **7**C. Within the present embodiment, it should be appreciated that the steps of flowchart **700** may be performed by software, by hardware or by any combination of software and hardware.

The present embodiment provides a method for restricting recording of high fidelity media content delivered via one or more communication networks. The present embodiment delivers the high fidelity media content to registered clients while preventing unauthorized clients from directly receiving media content from a source database. Once the client computer system receives the media content, it can be stored in hidden directories and/or custom file systems that may be hidden to prevent subsequent unauthorized sharing with others. It is noted that various functionalities can be implemented to protect and monitor the delivered media content. For example, the physical address of the media content can be hidden from media content recipients. Alternatively, the directory address of the media content can be periodically changed. Additionally, an access key procedure and rate control restrictor can also be implemented to monitor and restrict suspicious media content requests. Furthermore, a copyright compliance mechanism, (e.g., CCM **300**), can be installed in the client computer system **210** to provide client side compliance with licensing agreements and/or copyright restrictions applicable to the media content. By implementing these and other functionalities, the present embodiment restricts access to and the distribution of delivered media content and provides a means for copyrighted media owner compensation.

It is noted that flowchart **700** is described in conjunction with FIGS. **2**, **3**, **4**, and **5**A-**5**D, in order to more fully describe the operation of the present embodiment. In operation **702** of FIG. **7**A, a user of a computer system, (e.g., **210**), causes the computer to communicatively couple to a web server, (e.g., **250**), via one or more communication networks, (e.g., Internet **201**), and proceeds to attempt to log in. It is understood that the log in process of operation **702** can be accomplished in a variety of ways in accordance with the present invention.

In operation **704** of FIG. **7**A, web server **250** accesses a user database, (e.g., **450**), to determine whether the user and the computer system **210** logging in are registered with it. If the user and computer system **210** are registered with web server **250**, the present embodiment proceeds to operation **714**. However, if the user and computer system **210** are not registered with web server **250**, web server **250** can initiate a user and computer system **210** registration process at operation **706**.

In operation **706**, registration of the user and computer system **210** is initiated. The user and computer system registration process can involve the user of computer system **210** providing personal information including, but not limited to, their name, address, phone number, credit card number, online payment account number, biometric identification (e.g., fingerprint, retinal scan, etc.), and the like. Web server **250** can verify the accuracy of the information provided. Web server **250** can also acquire information regarding the user's computer system **210** including, but not limited to, identification of media players disposed and operable on system **210**, a unique identifier corresponding to the computer system, etc. In one embodiment, the unique identifier corresponding to the computer system can be a MAC address. Additionally, web server **250** can further request that the user of computer system **210** to select a username and password.

In operation **708** of FIG. **7**A, subsequent to the completion of the registration process, web server **250** generates a unique user identification (ID) or user key associated with the user of client computer system **210**. The unique user ID, or user key, is then stored by web server **250** in a manner that is associated with that registered user. Furthermore, one or more cookies containing that information specific to that user and the user's computer system **210**, is installed in a non-volatile memory device, (e.g., **103** and/or data storage device **108** of computer system **210**). It is noted that the user ID and cookie can be stored in a hidden directory within one or more non-volatile memory devices within computer system **210**, thereby preventing user access and/or manipulation of that information. It is further noted that if the unique user ID, or user key, has been previously generated for the user and computer **210** that initially logged-in at operation **702**, the present embodiment proceeds to operation **714**

In operation **710**, web server **250** verifies that the user ID and the cookie(s) are properly installed in computer system **210** and verifies the integrity of the cookie(s) and the user ID, thereby ensuring no unauthorized alterations to the user ID or the cookie(s) has occurred. If the user ID is not installed and/or not valid, web server **250** can re-initiate the registration process at operation **706**. Alternatively, web server **250** can decouple computer system **210** from the network, thereby requiring a re-log in by the user of computer **210**. If the cookie(s) and user ID are valid, the present embodiment proceeds to operation **712**.

In operation **712** of FIG. **7**A, web server **250** can install a version of a copyright compliance mechanism, (e.g., **300**), onto one or more non-volatile memory devices of computer system **210**. Installing CCM **300** into user's computer system **210** can facilitate client side compliance with licensing agreements and copyright restrictions applicable to specific delivered copyrighted media content. At operation **712**, the components of CCM **300**, such as instructions **301**, coder/decoder (codec) **303**, agent programs **304**, system hooks **305**, skins **306**, and custom media device drivers **307** (e.g., custom

media device **310** of FIGS. **5**B-**5**D), are installed in computer system **210**, such as that shown in FIGS. **5**A-**5**D. In one embodiment, a hypertext transfer protocol file delivery system can be utilized to install CCM **300** into computer system **210**. However, operation **712** is well suited to install CCM **300** on computer system **210** in a wide variety of ways in accordance with the present embodiment. For example, CCM **300** can be installed as an integrated component within a media player application, media recorder application, and/or media player/recorder applications. Alternatively, CCM **300** can be installed as a stand-alone mechanism within a client computer system **210**. Additionally, CCM **300** can be installed as a stand-alone mechanism and/or as part of a bundled application from a media storage device, (e.g., a CD, a DVD, an SD), and/or as part of an installation package. In another embodiment, CCM **300** can be installed in conjunction with a presentation of desired media content, (e.g., listening to an audio file on a music CD, reading a document, viewing a video, etc.). It is noted that, in one embodiment, CCM **300** may be installed on client system **210** in a clandestine manner, relative to a user.

In operation **714**, web server **250** can request the previously established username and password of the user of client computer system **210**. Accordingly, the user of client computer system **210** causes it to transmit to web server **250** the previously established username and password. Upon the receipt thereof, web server **250** may access a user database, (e.g., **450**), to determine their validity. If the username and password are invalid, web server **250** refuses access wherein flowchart **700** may be discontinued (not shown). Alternatively, if the username and password are valid, the present embodiment proceeds to operation **716**.

In operation **716** of FIG. **7**A, web server **250** can access media file database **450** to determine if copyright compliance mechanism **300** has been updated to reflect changes made to the DMCA (Digital Millennium Copyright Act) and/or to the interactive/non-interactive licensing agreements recognized by the DMCA. It is noted that alternative licensing agreements can be incorporated into copyright compliance mechanism **300**. Advantageously, by providing a copyright compliance mechanism that can be readily updated to reflect changes in existing copyright restrictions and/or the introduction of other types of licensing agreements, and/or changes to existing media player applications, and/or the development of new media player applications, copyright compliance mechanism **300** can provide compliance with current copyright restrictions associated with the media content.

Continuing with operation **716**, if web server **250** determines that CCM **300**, or components thereof, of computer **210** has not been updated, web server **250** initiates installation of the newer components and/or the most current version of CCM **300** into computer system **210**, shown as step **718**. If web server **250** determines that the current version of CCM **300** installed on system **210** does not have to be updated, the present embodiment proceeds to operation **720** of FIG. **7**B.

In operation **720** of FIG. **7**B, the user of client computer system **210** causes it to transmit to web server **250**, (e.g., via Internet **201**), a request for a play list of available media files. It is noted that the play list can contain all or part of the media content available from a content server, (e.g., **251**).

In operation **722**, in response to web server **250** receiving the play list request, web server **250** transmits to client computer system **210** a media content play list together with the unique user ID associated with the logged-in user. The user ID, or user key, can be attached to the media content play list in a manner invisible to the user. It is noted that the media content in content server **251** can be, but is not limited to, high fidelity music, audio, video, graphics, multimedia, alphanumeric data, software applications, and the like. The media content play list of operation **720** can be implemented in diverse ways. In one example, web server **250** can generate a media content play list by combining all the available media content into a single play list. Alternatively, all of the media content titles, or different lists of titles, can be loaded from content server **251** and passed to a CGI (common gateway interface) program operating on web server **250** where the media titles, or differing lists of titles, can be concatenated into a single dimensioned array that can be provided to client computer system **210**. It is understood that the CGI can be written in nearly any software computing language.

In operation **724** of FIG. **7**B, the user of client computer system **210** can utilize the received media content play list in conjunction with a media player application in order to cause client computer system **210** to transmit a request to web server **250** for delivery of desired media content, and wherein the user ID is automatically included therewith. The media content play list provided to client computer system **210** by web server **250** can enable the user to create one or more customized play lists by the user selecting desired media content titles. It is noted that a customized media play list can establish the media content that will eventually be delivered to client computer system **210** and the order in which the content will be delivered. Additionally, the user of client computer system **210** can create one or more customized play lists and store those play lists in system **210** and/or within web server **250**. It is noted that a customized play list does not actually contain the desired media content titles, but rather the play list includes one or more identifiers associated with the desired media content that can include, but is not limited to, a song, an audio clip, a video clip, a picture, a multimedia clip, an alphanumeric document, or particular portions thereof In another embodiment, the received media content play list can include a random media content delivery choice that the user of client computer system **210** can transmit to web server **250**, with the user ID, to request delivery of the media content in a random manner.

In operation **726**, upon receiving the request for media content from client computer system **210**, web server **250** determines whether the requesting media application operating on client computer system **210** is a valid media application. One of the functions of a valid media application is to be a player of media content as opposed to an application that downloads media content in an unauthorized or unregulated manner. If web server **250** determines that the media application operating on system **210** is not a valid media application, the present embodiment proceeds to operation **727** which in one embodiment, redirects client computer system **210** to a web site where the user of system **210** can download a valid media player application or to a software application which can identify client computer system **210**, log system **210** out of web server **250** and/or prevent future logging-in for a defined period of time, (e.g., 15 minutes, an hour, a day, a week, a month, a year, or any specified amount of time). If web server **250** determines that the media application operating on system **210** is a valid media application, the present embodiment proceeds to operation **728**.

In operation **728** of FIG. **7**B, the present embodiment causes web server **250** to determine whether the user ID (or user key) that accompanied the media delivery request sent by client computer system **210** is valid. If web server **250** determines that the user ID is invalid, the present embodiment proceeds to operation **729** where client computer system **210** can be logged off web server **250** or client computer system **210** can be returned to step **706** (of FIG. **7**A) to re-register and

to have another unique user ID generated by web server **250**. It is noted that the order in which operations **726** and **728** are performed can be altered such that operation **728** can be performed prior to operation **726**. If web server **250** determines that the user ID is valid, the present embodiment proceeds to operation **730**.

In operation **730**, prior to web server **250** authorizing the delivery of the redirect and access key for the requested media file content, shown as operation **732**, CCM **300** governs certain media player applications and/or functions thereof that are operable on client computer system **210**. These governed functions can include, but are not limited to, pause, stop, progress bar, save, etc. It is noted that, in one embodiment, CCM **300** can utilize system hooks **305** to accomplish the functionality of operation **730**.

In operation **732** of FIG. **7**C, the present embodiment causes web server **250** to transmit to client computer system **210** a redirection command along with a time sensitive access key (e.g., for that hour, day or for any defined period of time) thereby enabling client computer system **210** to receive the requested media content. The redirection command can include a time sensitive address of the media content location within content server **251**. The address is time sensitive because, in one embodiment, the content server **251** periodically renames some or all of the media address directories, thereby making previous content source addresses obsolete. Alternatively, the address of the media content is changed. In another embodiment, the location of the media content can be changed along with the addresses. Regardless, unauthorized users and/or applications are restricted from directly retrieving and/or copying the media content from content server **251**. Therefore, if someone with inappropriate or unlawful intentions is able to find where the media content is stored, subsequent attempts will fail, as the previous route no longer exists, thereby preventing future unauthorized access.

It is noted that in one embodiment of the present invention, the addresses (or routes) of content server **251** that are actively coupled to one or more client computer systems (e.g., **210**-**230**) are maintained while future addresses, or routes, are being created for new client devices. It is further noted that as client computer systems are uncoupled from the media content source of content server **251**, that directory address, or link, can be immediately changed, thereby preventing unauthorized client system or application access.

In another embodiment, the redirection of client computer system **210** to content server **251** can be implemented by utilizing a server network where multiple servers are content providers, (e.g., **251**), or by routing a requesting client computer system (e.g., **210**, **220**, or **230**) through multiple servers. In yet another embodiment, the delivery of media content from a central content provider (e.g., **251**) can be routed through one or more intermediate servers before being received by the requesting client computer system, (e.g., **210**).

The functionality of operation **732** is additionally well suited to provide recordation of the Internet Protocol (IP) addresses of the client computer systems, (e.g., **210**), the media content requested and its transfer size, thereby enabling accurate monitoring of royalty payments, clock usage and transfers, and media content popularity.

In operation **734** of FIG. **7**C, upon receiving the redirection command, the present embodiment causes the media playback application **501** (FIGS. **5**A-**5**D) operating on client computer system **210** to automatically transmit to content server **251** a new media delivery request which can include the time sensitive access key and the address of the desired media content.

In operation **736** of FIG. **7**C, content server **251** determines whether the time sensitive access key associated with the new media delivery request is valid. If content server **251** determines that the time sensitive access key is valid, the present embodiment proceeds to operation **738** of FIG. **7**C. However, if content server **251** determines that the time access key is not valid, the present embodiment proceeds to operation **737**, a client redirect.

In operation **737**, content server redirects client computer **210** to operation **732** (not shown) where a new access key is generated. Alternatively, operation**737** causes the present embodiment to return to operation **704** of FIG. **7**A. In yet another embodiment, operation **737** can cause client computer system **210** to be disconnected from content server **251**.

In operation **738** of FIG. **7**C, content server **251** transmits the requested high fidelity media content to client computer system **210**. It is noted that each media content file delivered to client computer system **210** can have a header attached thereto, prior to delivery, as described herein with reference to FIG. **4**. It is further noted that both the media content and the header attached thereto can be encrypted. In one embodiment, the media content and the header can be encrypted differently. Alternatively, each media content file can be encrypted differently. In another embodiment, groups of media files are analogously encrypted. It is noted that public domain encryption mechanisms, (e.g., Blowfish), and/or non-public domain encryption mechanisms can be utilized.

Still referring to operation **738**, content server **251** can transmit the requested media content in a burst load (in comparison to a fixed data rate), thereby transferring the content to client computer system **210** as fast as the network transfer rate allows. Further, content server **251** can have its download rate adapted to be equal to the transfer rate of the network to which it is coupled. In another embodiment, the content server **251** download rate can be adapted to equal the network transfer rate of the client computer system **210** to which the media content is /being delivered. For example, if client computer system **210** is coupled to Internet **201** via a T1 connection, then content server **251** transfers the media content at transmission speeds allowed by the Ti connection line. As such, once the requested media content is transmitted to client computer system **210**, content server **251** is then able to transmit requested media content to another client computer system, (e.g., **220** or **230**). Advantageously, this provides an efficient means to transmit media content, in terms of statistical distribution over time and does not overload the communication network(s).

It is noted that delivery of the requested media content by content server **251** to client computer system **210** can be implemented in a variety of ways. For example, an HTTP (hypertext transfer protocol) file transfer protocol can be utilized to transfer the requested media content as well as a copyright compliance mechanism **300** to client **210**. In this manner, the copyright compliance mechanism as well as each media content file/title can be delivered in its entirety. In another embodiment, content server **251** can transmit to client computer system **250** a large buffer of media content, (e.g., audio clips, video clips, and the like).

In operation **740** of FIG. **7**C, upon receiving the requested high fidelity media content from content server **251**, the present embodiment causes client computer system **210** to store the delivered media content in a manner that is ready for presentation, (e.g., playback). The media content is stored in client computer system **210** in a manner that restricts unauthorized redistribution. For example, the present embodiment can cause the high fidelity media content to be stored in a volatile memory device (e.g., **103**), utilizing one or more

hidden directories and/or custom file systems that may be hidden, where it may be cached for a limited period of time. Alternatively, the present embodiment can cause the high fidelity media content to be stored in a non-volatile memory device, (e.g., **104**) or data storage device (e.g., **109**). It is noted that the manner in which each of the delivered media content file(s) is stored, volatile or non-volatile, can be dependent upon the licensing restrictions and/or copyright agreements applicable to each media content file. It is further noted that in one embodiment, when a user of client computer system **210** turns the computer off or causes client computer system **210** to disconnect from the network, the media content stored in a volatile memory device is typically deleted therefrom.

Still referring to operation **740**, in another embodiment, the present embodiment can cause client computer system **210** to store the received media content in a non-volatile manner within a media application operating therein, or within one of its Internet browser applications (e.g., Netscape Communicator™, Microsoft Internet Explorer™, Opera™, Mozilla™, and the like) so that delivered media content can be used in a repetitive manner. Further, the received media content can be stored in a manner making it difficult for a user to redistribute in an unauthorized manner, while allowing the user utilization of the received media content, (e.g., by utilizing one or more hidden directories and/or custom file systems that may also be hidden). It is noted that by storing media content with client computer system **210** (when allowed by applicable licensing agreements and/or copyright restrictions), content server **251** does not need to redeliver the same media content to client computer system **210** each time its user desires to experience (e.g., listen to, watch, view, etc.) the media content file.

In operation **742** of FIG. **7**C, the received media content file is then fed into a media player application (e.g., playback application **501** of FIGS. **5**A-**5**D), which then runs it through a codec, (e.g., coder/decoder **303** of CCM **300**), in one embodiment. In response, coder/decoder **303** sends an authorization request to the content server, (e.g., **251**), with attached authorization data, as described herein. In response to receiving codec's **303** authorization request, content server **251** compares the received authorization data with that stored in server **251**, and subsequently, the present embodiment proceeds to operation **744**.

In operation **744**, the content server **251** responds with a pass or fail authorization. If server **251** responds with a fail, such that the received authorization data is invalid, the present embodiment can proceed to operation **745**, where server **251** can, in one embodiment, notify the user of client system **210**, (e.g., by utilization of skin **306**), that there was an unsuccessful authorization of the requested media content file. It is noted that alternative messages having similar meanings may also be presented to the user of client computer system **210**, thereby informing the user that the delivery failed. However, if the authorization data passes, the present embodiment proceeds to operation **746**.

In operation **746**, server **251** transmits certain data back to the media player application enabling the media player application to present the contents of the media file via media playback application **501** of FIGS. **5**A-**5**D. In one embodiment, a decryption key can be included in the transmitted data to decrypt the delivered media content file. In another embodiment, an encryption/decryption key can be included in the transmitted data to allow access to the contents of the media file. The present method then proceeds to operation **748**.

In operation **748** of FIG. **7**C, subsequent to media file decryption, the media file may be passed through CCM **300**, (e.g., a codec **303**), to a media player application operating on client computer system **210**, (e.g., playback application **501** of FIGS. **5**A-**5**D), which can then access and utilize the delivered high fidelity media content, enabling its user(s) to experience the media content, (e.g., listen to it, watch it, view it, or the like). In one embodiment of the present invention, a specialized or custom media player may be involved in order to experience the media content, (e.g., skin **306** of FIG. **3**). Skin **306** may be implemented when CCM **300** cannot modify an industry standard media player application to comply with copyright restrictions and/or licensing agreements in accordance with the DMCA. Alternatively, a specialized or custom media player may not be needed to experience the media content. Instead, an industry standard media player can be utilized by client computer system **210** to experience the media content. Typically, many media player applications are available and can include, but are not limited to, Windows™ Media Player™ for PCs (personal computers), iTunes™ Player or QuickTime™ for Apple computers, and XMMS player for computers utilizing a Linux operating system. Regardless of the media player application utilized, while the media file is passed to the media player application, (e.g., in a frame by frame basis or in a buffer by buffer basis), coder/decoder **303** will repeatedly ensure that CCM **300** rules are being enforced at any particular moment during media playback, shown as operation **750**.

In operation **750**, as the media file content is delivered to the media player application, (e.g., media player application **501** of FIGS. **5**A-**5**D), periodically, (e.g., after a specified number of frames, after a defined period of time, or any desired time or data period), coder/decoder **303** repeatedly determines whether or not all the rules are enforced, in accordance with rules as defined by CCM **300**. If the rules are not enforced, (e.g., change due to a user opening up a recording application (e.g., Total Recorder or alternative application)) the present method proceeds to operation **751**. If the rules, in accordance with CCM **300**, are enforced, the present embodiment then proceeds to operation **752**.

In operation **751** of FIG. **7**C, if the rules according to CCM **300** are not enforced, the presentation of the media content is, in one embodiment, suspended or halted. In one embodiment, CCM **300** of FIG. **5**A can selectively control switches **311** and **511** to prevent output of incoming media **499** (FIGS. **5**A, **5**B, **5**C, and **5**D) to a recording application **502** (FIGS. **5**A, **5**B, and **5**C, via wave shim driver **309** and direct sound **504** respectively, thus preventing unauthorized recording of incoming media **499**. In another embodiment, CCM **300** of FIG. **5**B can selectively control switches **311** and **312** to prevent output of incoming media **499** to recording application **502** via wave shim driver **309** and custom media device **310**, thus preventing unauthorized recording of incoming media **499**. In yet another embodiment, CCM **300** of FIG. **5**C can selectively control switches **311**, **312**, to not only prevent incoming media **499** from being recorded in an unauthorized manner but can also selectively control switch **571** to prevent unauthorized output of incoming media **499** via digital output **575** of media hardware output device **570**. In yet another embodiment, CCM **300** of FIG. **5**D can selectively control switches **311**, **312**, **571**, and **511** to a prevent kernel streaming mechanism **515**, (e.g., DirectKS) which can establish a connection with media device driver **505** of FIG. **5**D, from capturing incoming media content and returning it to a recording application (e.g., **502**) to create an unauthorized recording of the media content. In one embodiment, incoming media **499** may not be output from digital output **575**. In another embodiment, incoming media **499** may be output via digital output **575** but in an inaudible manner, (e.g., silence). In yet another

embodiment, incoming media **499** can be audible but recording functionality can be disabled, such that the media content cannot be recorded.

In operation **752**, if the rules are enforced in accordance with CCM **300**, codec **303** retrieves a subsequent portion of the media content that is stored locally in client computer system **210**. The newly retrieved portion of the media file is then presented by the client's media player application, shown in the present method as step **748**. While the newly retrieved portion is presented, embodiments of the present method then again perform step **750**, then step **752** or **751**, then step **748**, then **750**, etc., in a continual loop until the media file contents are presented in their entirety. Advantageously, by constantly monitoring playing media files, CCM **300** can detect undesired activities and enforce those rules defined by CCM **300**.

FIG. **8** is a diagram of an exemplary high-speed global media content delivery system **800**, in accordance with an embodiment of the present invention. In one embodiment, system **800** can be utilized to globally deliver media content, e.g., audio media, video media, graphic media, multimedia, alphanumeric media, etc., to one or more client computer systems, (e.g., **210**, **220**, and/or **230**), in conjunction with a manner of delivery similar to that described herein. In one embodiment, system **800** includes a global delivery network **802** that can include multiple content servers, (e.g., **804**, **806**, **808**, **810**, **812**, **814**, and **816**), that can be located throughout the world and which may be referred to as points of presence or media delivery point(s). Each of content server **804-816** can store a portion, a substantial portion, or the entire contents of a media content library that can be delivered to client computer systems via one or more networks, (e.g., Internet **201**, or a WAN (wide area network)). Accordingly, each of content server **804-816** can provide media content to of client computer systems in its respective vicinity of the world. Alternatively, each content server can provide media content to a substantial number of client computer systems

For example, a media delivery point (MDP) **816**, located in Tokyo, Japan, is able to provide and deliver media content from the media content library stored in its content database, (e.g., **451**), to client computer systems within the Asiatic regions of the world while a media delivery point **812**, located in New York City, N.Y., USA, is able to provide and deliver media content from its stored media content library to client devices within the Eastern United States and Canada. It is noted that each city name, (e.g., London, Tokyo, Hamburg, San Jose, Amsterdam, or New York City), associated with one of the media delivery points **804-816** represents the location of that particular media delivery point or point of presence. However, it is further noted that these city names are exemplary because media delivery points **804-816** can be located anywhere within the world, and as such are not limited to the cities shown in global network **802**.

Still referring to FIG. **8**, it is further noted that global system **802** is described in conjunction with FIGS. **2**, **3**, **4**, **5**A-D, and **6**, in order to more fully describe the operation of embodiment. Particularly, subsequent to a client computer system, e.g., client computer system **210** of FIG. **2**, interacting with a web server, (e.g., web server **250** of FIG. **2**), as described herein, web server (e.g., **250** of FIG. **2**), in one embodiment, can redirect client computer system **210** to receive the desired media content from an MDP (e.g., **804-816**) based on one or more differing criteria.

For example, computer system **210** may be located in Brattleboro, Vermont, and its user causes it to log-in with a web server **250** which can be located anywhere in the world. It is noted that operations **702-730** of FIGS. **7**A and **7**B can then be performed as described herein such that the present embodiment proceeds to operation **732** of FIG. **7**C. At operation **732**, the present embodiment can determine which media delivery points, (e.g., **804**, **806**, **808**, **810**, **812**, **814**, or **816**), can subsequently provide and deliver the desired media content to client computer system **210**.

Still referring to FIG. **8**, one or more differing criteria can be utilized to determine which media delivery point to select for delivery of the desired media content. For example, the present embodiment can base its determination upon which media delivery point is in nearest proximity to client computer system **210**, (e.g., media delivery point **816**). This can be performed by utilizing the stored registration information, (e.g., address), provided by the user of client computer system **210**. Alternatively, the present embodiment can base its determination upon which media delivery point provides media content to the part of the world in which client computer system is located. However, if each of the media delivery points (e.g., **804-816**) stores differing media content, the present embodiment can determine which one can actually provide the desired media content. It is noted that these are exemplary determination criteria and the embodiments of the present invention are not limited to such implementation.

Subsequent to determination of which media delivery point is to provide the media content to client computer system **210** at operation **732**, web server **250** transmits to client computer system **210** a redirection command to a media delivery point/content server (e.g., **812**) along with a time sensitive access key, also referred to as a session key, (e.g., for that hour, day, or any defined time frame) thereby enabling client computer system **210** to eventually receive the requested media content. Within system **800**, the redirection command can include a time sensitive address of the media content location within media delivery point **812**. Accordingly, the New York City media delivery point **812** can subsequently provide and deliver the desired media content to client computer system **210**. It is noted that operations **732-742** can be performed by media delivery point **812** in a manner similar to content server **251** described herein.

Advantageously, by utilizing multiple content servers, (e.g., media delivery point **804-816**), to provide high fidelity media content to client computer systems, (e.g., **210-230**), located throughout the world, communication network systems of the Internet **201** do not become overly congested. Additionally, global network **802** can deliver media content to a larger number of client computer systems (e.g., **210-230**) in a more efficient manner. Furthermore, by utilizing communication technology having data transfer rates of up to **320** Kbps (kilobits per second) or higher, embodiments of the present invention provide for rapid delivery of the media content in a worldwide implementation.

Referring still to FIG. **8**, it is noted that media delivery points/content servers **804-816** of global network **802** can be coupled in a wide variety of ways in accordance with the present embodiment. For example, media delivery point **804-816** can be coupled utilizing wired and/or wireless communication technologies. Further, it is noted that media delivery points **804-816** can be functionally coupled such that if one of them fails, another media delivery point can take over and fulfill its functionality. Additionally, one or more web servers similar to web server **250** can be coupled to global network **802** utilizing wired and/or wireless communication technologies.

Within system **800**, content server/media delivery point **804** includes a web infrastructure that, in one embodiment, is a fully redundant system architecture. It is noted that each of the MDP/content server **806-816** of global network **802** can

be implemented to include a web infrastructure in a manner similar to the implementation shown in MDP **804**.

Specifically, the web infrastructure of media delivery point **804** includes firewalls **818** and **820** which are each coupled to global network **802**. Firewalls **818** and **820** can be coupled to global network **802** in diverse ways, (e.g., utilizing wired and/or wireless communication technologies). Particularly, firewalls **818** and **820** can each be coupled to global network **702** via a 10/100 Ethernet handoff. However, system **800** is not limited in any fashion to this specific implementation. It is noted that firewalls **818** and **820** are implemented to prevent malicious users from accessing any part of the web infrastructure of media delivery point **804** in an unauthorized manner. Additionally, firewall **818** can include a device **836**, (e.g., a router or other switching mechanism), coupled therewith and a DB (database) server **840** coupled to device **836** while firewall **820** includes a device **838**, (e.g., a router or other switching mechanism), coupled therewith and a DB (database) server **842** coupled to device **838**. Furthermore, DB server **840** is coupled with device **838** and DB server **842** is coupled with device **836**.

Still referring to FIG. **8**, and within media delivery point **804**, firewall **818** is coupled to a director device **822** which is coupled to internal web application server **826** and **828**, and a hub server **830**. Firewall **820** is coupled to a director **824** which is coupled to internal web application servers **826** and **828**, and hub server **830**. Hub server **830** can be implemented in a variety of ways including, but not limited to, as a Linux hub server. Hub server **830** is coupled to a data storage device **832** capable of storing media content. Data storage device **832** can be implemented in a variety of ways, e.g., as a RAID (redundant array of inexpensive/independent disks) appliance.

It is noted that media delivery points **804-816** can be implemented in any manner similar to content server **250** described herein. Additionally, media delivery points **804-816** of the present embodiment can each be implemented as one or more physical computing devices, (e.g., computer system **100** of FIG. **1**).

In another embodiment, CCM **300** can be adapted to be disposed on a media storage device, (e.g., media storage device **999** of FIGS. **10** and **11**). Media storage device **999** can be, but is not limited to, a CD, a DVD, or other optical or magnetic storage device. By virtue of disposing a version of CCM **300** on a media storage device **999**, embodiments of the present invention can provide copy protection for audio, video, multimedia, graphics, information, data, software programs, and other forms of media that may contain copyrighted material and which may be disposed on a media storage device. Alternatively, CCM **300** can be adapted to be installed on a computer system, (e.g., **210**), via a media storage device **999** upon which it may be disposed.

FIG. **9** is a block diagram of a copyright compliance mechanism/media storage device (CCM/MSD) **900**, a version of CCM **300** adapted to be disposed on a media storage device, (e.g., media storage device **999** of FIGS. **10** and **11**) in accordance with an embodiment of the present invention. It is noted that CCM **300** in CCM/MSD **900** is analogous to CCM **300** as described in FIGS. **3**, **4**, **5**A-D, **6**A and **7**A-C. Further, CCM/MSD **900** can be readily updated in accordance with global delivery system **800**, as described in FIGS. **7**A-C, and FIG. **8**.

In one embodiment, CCM/MSD **900** is adapted to provide stand-alone compliance with copyright restrictions and/or licensing agreements applicable to media files that may be disposed on a media storage device, (e.g., media storage device **999**). In another embodiment, CCM/MSD **900** is adapted to be installed on a computer system, (e.g., **210**), to provide compliance with copyright restrictions and licensing agreements applicable to media files as described in FIGS. **3**, **4**, **5**A-D, **6**A and **7**A-C.

Referring to FIG. **9**, CCM/MSD **900** includes an autorun protocol component **910** for invoking automatic installation of CCM **300**. To deter users from attempts at defeating various features inherent to CCM **300**, (e.g., the autorun feature), CCM **300**'s monitoring program, agent program **304**, verifies that those features that are to be operational are operational, and if not, CCM **300** prohibits the user from experiencing the contents of the media storage device.

If a user somehow defeats the autorun feature, and the user attempts to utilize an application to capture an image of the content, the application will make an image of the content on the media storage device, which also images the copyright protection contained thereon. As such, when the image is played, CCM **300** recognizes the copy protection is present, and CCM **300** will only allow the user to experience the content when authorized, once CCM **300** is installed.

By virtue of the protections as described above provided by CCM **300**, users will be able to experience the content of the media storage device in the content's original high quality format, thereby obviating the need to compress the media file used on client system **210**.

Advantageously, the user will no longer need to suffer through poor quality output as a result of severely compressed media files.

It is noted that when adapted to be implemented in conjunction with a secure file format, meaning that the format of the file is, without proper authorization, non-morphogenic, embodiments of the present invention also provide effective compliance with copyright restrictions and/or licensing agreements with secure files formats. CCM **300** can control the types of file formats into which the media file can be transformed, (e.g., .wav, .mp3, etc.).

In one embodiment, the autorun feature associated with a media storage device drive (e.g., **1112** of FIG. **10**) of client system **210** is activated and operational. Alternatively, a notice of required autorun activation within client system **210** may be displayed on the media storage device and/or the case in which the media storage device is stored.

In another embodiment, if CCM **300** is present or if the user is coupled to a server, then messages containing instructions on how to activate the autorun feature of client system **210** may be presented to the user.

In one embodiment autorun protocol component **910** can detect media storage device drives resident on a computer system, (e.g., **210**).

The following C++ source code is an exemplary implementation of a portion of autorun protocol component **910** for detecting media storage device drives residing and operable on client computer system **210**, according to one embodiment of the present invention.

```
    if ( (dwRetVal = GetLogicalDrives( ))
    != (DWORD) 0)
{
    /* initialize variables */
    dwMask = (DWORD) 1;
    /* initialize path to root of current drive */
    _tcscpy(szDrive, _T("A:\\"));
    for (nIndex = 0, dwMask = (DWORD) 1;
          dwMask != (DWORD) 0;
          nIndex++, dwMask <<= 1)
    {
```

-continued

```
            if ((dwRetVal & dwMask) != 0)
            {
                /* construct path to root of drive */
                szDrive[0] = (TCHAR) 'A' + nIndex;
                if (GetDriveType(szDrive) == DRIVE_CDROM)
                {
                    MessageBox((HWND) 0,
                            _T("CD-ROM drive found."),
                            szDrive,
                            MB_OK);
                }
                else
                {
                    /* clear bit at current position */
                    dwRetVal &= (~dwMask);
                }
            }
        }
    }
```

In another embodiment, autorun protocol component **910** can detect whether a media storage device containing media files has been inserted into a media storage device drive coupled with client computer system **210**, (e.g., drive **1112** of FIG. **10**). In another embodiment, CCM **300** can include instructions for monitoring media storage device drive **1112**, and upon detection of drive activation, CCM **300** determines what type of media storage device has been inserted therein. Subsequently, CCM **300** can detect various triggers on the media storage device to invoke its protection, (e.g., a hidden file on newer media storage devices and/or the copyright indicator bit on legacy media storage devices), obviating the need for autorun. Upon detection, CCM **300** can invoke the appropriate protection for the associated media file.

The following C++ source code is an exemplary implementation of a portion of autorun protocol component **910** for detecting a media storage device inserted in a media storage device drive residing and operable on client computer system **210**, according to one embodiment of the present invention.

```
    /* set error mode for operation */
uiErrMode = SetErrorMode(SEM_FAILCRITICALERRORS);
    /* initialize path to root of current drive */
    _tcscpy(szDrive, _T("A:\\"));
    for (nIndex = 0, dwMask = (DWORD) 1;
        dwMask != (DWORD) 0;
        nIndex++, dwMask <<= 1)
    {
        if ((dwCDROMMask & dwMask) != 0)
        {
            /* construct path to root of drive */
            szDrive[0] = (TCHAR) 'A' + nIndex;
            if (  GetDiskFreeSpace(szDrive,
                                   &dwSectors,
                                   &dwBytes,
                                   &dwClustersFree,
                                   &dwClusters)
                != 0)
            {
                /* add bit for drive to mask */
                dwRetVal |= dwMask;
            }
        }
    }
    /* restore original error mode */
    SetErrorMode(uiErrMode);
```

Additionally, autorun protocol component **910** can also detect changes in media, (e.g., insertion of a different media storage device **999**). Further, other media changes can be detected subsequent to adaptation of the source code including, but not limited to, detecting a previously accessed media file and/or detecting a previously inserted media storage device.

The following C++ source code is an exemplary implementation of a portion of autorun protocol component **910** for detecting a change in media, according to one embodiment of the present invention.

```
    /* initialize path to root of current drive */
_tcscpy(szDrive, _T("A:\\"));
for (nIndex = 0, dwMask = (DWORD) 1;
    dwMask != (DWORD) 0;
    nIndex++, dwMask <<= 1)
{
    /* check for presence of CD-ROM media in drive */
    if ((dwCurrMask & dwMask) != 0)
    {
        /* check if media previously in drive */
        if ((dwPrevMask & dwMask) == 0)
        {
            /* construct path to root of drive */
            szDrive[0] = (TCHAR) 'A' + nIndex;
            /* check for presence of marker on drive */
            if (IsMPBMarkerPresent(szDrive) != 0)
            {
                /* process autorun information present on drive */
                nRetVal = ProcessAutorun(szDrive);
            }
        }
    }
}
```

Still referring to FIG. **9**, CCM/MSD **900** also includes a kernel level filter driver **920** for controlling a data input path of an operating system coupled with and operable on client computer system **210**.

CCM/MSD **900** also includes a generalized filter driver **930** for controlling ripping and "burning" applications, (e.g., Nero, Roxio, Exact Audio Copy, and others), thereby preventing such activities.

The following C++ source code is an exemplary implementation of a portion of generalized filter driver **930** for controlling ripping and burning applications that may be residing on and operable within client computer system **210**, in accordance with one embodiment of the present invention.

```
bool    bDisabled;          /* flag indicating CD reads disabled */
        /* initialize variables */
        bDisabled = false;
        if (bProtected == true)
        {
            if (type == IRP_MJ_DEVICE_CONTROL)
            {
                ULONG ulIoControlCode = stack-
```

-continued

```
>Parameters.DeviceIoControl.IoControlCode;
                    if (ulIoControlCode == IOCTL_SCSI_PASS_THROUGH)
                    {
                        SCSI_PASS_THROUGH * pspt = (SCSI_PASS_THROUGH *)
Irp->AssociatedIrp.SystemBuffer;
                        if (   (pspt != NULL)
                            && (pspt->Cdb[0] == SCSIOP_READ_CD))
                        {
                            pspt->DataTransferLength = 0;
                            pspt->ScsiStatus = 0;
                            bDisabled = true;
                        }
                    }
                    else if (ulIoControlCode == IOCTL_SCSI_PASS_THROUGH_DIRECT)
                    {
                        SCSI_PASS_THROUGH_DIRECT * psptd =
(SCSI_PASS_THROUGH_DIRECT *)
Irp->AssociatedIrp.SystemBuffer;
                        if ( (psptd != NULL)
                            && (psptd->Cdb[0] == SCSIOP_READ_CD))
                        {
                            psptd->DataTransferLength = 0;
                            psptd->ScsiStatus = 0;
                            bDisabled = true;
                        }
                    }
                }
            }
            if (bDisabled == true)
            {
                /* complete current request */
                status = CompleteRequest(Irp, STATUS_SUCCESS, 0);
            }
            else
            {
                /* pass request down without additional processing */
                status = IoAcquireRemoveLock(&pdx->RemoveLock, Irp);
                if (!NT_SUCCESS(status))
                    return CompleteRequest(Irp, status, 0);
                IoSkipCurrentIrpStackLocation(Irp);
                status = IoCallDriver(pdx->LowerDeviceObject, Irp);
                IoReleaseRemoveLock(&pdx->RemoveLock, Irp);
            }
```

Still referring to FIG. **9**, CCM/MSD **900** includes a CCM **300**, analogous to CCM **300** of FIG. **3**, that is adapted to be installed in client computer system **210** in one or more ways described herein.

In one embodiment, kernel level filter driver **920**, generalized filter driver **930** and CCM **300** of CCM/MSD **900** are automatically installed on client computer system **210**, subsequent to insertion of media storage device **999** into a media storage device drive, (e.g., media storage device drive **1112** of FIGS. **10** and **11**). Autorun protocol component **910**, as described above, detects insertion of media storage device **999** into an appropriate drive, and initiates installation of the components, (e.g., CCM **300**, driver **920** and driver **930**). In one embodiment, drivers **920** and **930** may be temporarily installed and may be deleted upon removal of media storage device **999** from media storage device drive **1112**. In yet another embodiment, drivers **920** and **930** may be installed in hidden directories and/or files within client computer system **210**. In another embodiment, some components of CCM **300** can remain installed on client system **210**, (e.g. the monitoring program (agent program **304**)). In still another embodiment, other components, (e.g., the kernel level filter driver **920**), can be dynamically loaded and unloaded as necessary in accordance with copyright restrictions and/or licensing agreements applicable to the media file.

Embodiments of the present invention utilize software, (e.g., CCM/MSD **900**), that is placed on media storage device **999**, in conjunction with controlling software CCM **300** installed on client computer system **210**, and web server **250** and/or content server **251**, wherein each component is communicatively coupled with the other via the Internet, thereby enabling dynamic updating of CCM **300** in the manner as described with reference to FIG. **4**, and operations **716** and **718** of FIGS. **7A-C**.

In the present embodiment, CCM/MSD **900** provides a stand-alone DRM that is far more sophisticated than existing DRM solutions. This is because CCM/MSD **900** goes into the data pathway of the operating system operable on client computer system **210** and obtains control of the data pathway, (e.g., filter driver **1108** of FIG. **11**), rather than exploiting inefficiencies or errors in the computer system.

FIG. **10** is a block diagram of a communicative environment **1000** for controlling unauthorized reproduction of protected media files disposed on a media storage device in accordance with an embodiment of the present invention. Included in communicative environment **1000** is a media storage device drive **1112** coupled with a client computer system **210** via a data/address bus **110**. Client computer system **210** is coupled with web server **250** and content server **251** via Internet **201**. A media storage device **999**, upon which a CCM/MSD **900** may be disposed, can be inserted in media storage device drive **1112**. As such, autorun protocol component **910** detects the insertion and automatically invokes installation of CCM **300**, kernel level filter driver **920** and generalized filter driver **930** from media storage device **999** into client computer system **210**. Subsequent to installation,

CCM **300** initiates a dynamic update with web server **250** and/or content server **251**, via Internet **201**. By installing CCM **300** on client computer system, agent program **304** (FIG. **3**) of CCM **300** is able to control the integrity of the software associated with CCM/MSD **900**. Additionally, by conferring with servers **250** and/or **251** via Internet **201** online, the CCM **300** software version on media storage device **999** and installed on client computer system **210** can be updated when circumventions occur and/or kept current from platform to platform.

Advantageously, the monitoring mechanism of agent program **304** enables constant morphing of the version of CCM **300** disposed on media storage device **999** by communicating with server **250** and/or **251** and utilizing the dynamic update capabilities of global network **800** to readily update that which has been installed on client computer system **210**, via media storage device **999**.

In one embodiment, the installation is performed clandestine with respect to the user and is initiated by inserting media storage device **999** into an appropriate media storage device drive, (e.g. a magnetic/optical disk drive or alternative device drive coupled with client system **210**). If the user is not registered with CCM **300**, as described herein with reference to FIG. **4** and FIGS. **7**A-**7**C, once installed, CCM **300** initiates an update process with web server **250** and/or content server **251** to readily include updates that have been invoked subsequent to release of the media file on media storage device **999**. By virtue of the dynamic update capabilities of CCM **300**, regardless of the version of CCM **300** on media storage device **999**, CCM **300** provides compliance with copyright restrictions and/or licensing agreements applicable to the media file on media storage device **999**. Advantageously, enabling dynamic adaptability of CCM **300** provides for continued interoperability with new and updated operating systems, advancements in electronic technology, communication technologies and protocols, and the like, ensuring the effectiveness of CCM **300** into the future.

In another embodiment, if the user is a registered user with global delivery system **800**, CCM **300** can detect which version is most current. Accordingly, when the version existing on client system **210** is more current that the version (for install) on media storage device **999**, CCM **300** can bypass the install process and present the contents contained on media storage device **999** to the user for them to experience.

Further advantageous, this technology is backward compatible with media storage device drives manufactured subsequent to and including the year 1982. Additionally, CCM **300** is compatible with media storage devices having a copyright indicator bit disposed thereon. The copyright indicator bit has been included on all CDs released since the year 1982.

In the present embodiment of FIG. **10**, the media content is not encrypted on media storage device **999**. In one embodiment, if the media content is encrypted on computer **210**, it can be decrypted on the computer **210**. However, home players and/or stand alone media playing devices rarely include a decryption mechanism, and to experience the music on a home machine, the music is conventionally not encrypted.

In one embodiment, an additional component of CCM **300** is that the trigger for agent program **304** may be the copyright bit indicator. This means when the copyright indicator bit is detected by CCM **300**, the functions of CCM **300** are initiated. Alternatively, in another embodiment, when the copyright bit indicator is not detected, CCM **300** may remain in an un-invoked or idle state. If CCM **300** can detect the copyright bit indicator, CCM **300** can provide the appropriate compliance with regard to copyright restrictions and/or licensing agreements applicable to the media files.

In an alternative embodiment, a trigger control in the table of contents of a media storage device **999** includes instructions for triggering autorun protocol **910** of CCM/MSD **900** and can utilize the copyright indicator bit or alternative implementation to trigger the technology. In this manner, CCM **300** can control copyrighted works while public domain material can be experienced and reproduced at a user's discretion. Because autorun can be problematic for media storage device manufacturers, embodiments of CCM/MSD **900** can include alternative autorun programs that perform analogous to autorun.

In another embodiment, CCM **300** can invoke its own proprietary player, (e.g., custom media device **310**) as described with reference to FIG. **3**, thus enabling increased control of copyright restrictions and/or licensing agreements applicable to the media. By invoking custom media device **310**, CCM **300** enables user experience of the media while providing protection against unauthorized reproduction of the media disposed on media storage device **999**.

In an alternative embodiment, the media files and the CCM/MSD **900** disposed on a media storage device **999** are encrypted. This implementation is particularly advantageous for demonstration (demo) versions of media files, beta test versions, and the like that may be disposed on media storage device **999**. It is noted that the present embodiment is operable in an online environment, meaning that client computer system **210** is communicatively coupled with web server **250** and/or content server **251** to enable a user experience of the content on a demo version of media storage device **999**. In this implementation, CCM **300** allows for specific plays for specific users, which can be controlled via a network, (e.g., network **1000** of FIG. **10**), and server **250** and/or **251**.

In another embodiment, CCM **300** can be implemented for demo and/or pre-release protection. In this embodiment, CCM **300** utilizes sophisticated encryption technology to encrypt the table of contents and CCM **300** with an associated decrypted key located on client computer system **210**. Encrypting CCM **300** can also deter nefarious attempts to reverse engineer CCM **300**. Decryption can be performed using an associated decryption key. Alternatively, decryption can be performed by a proprietary or custom media player application resident on demo media storage device, (e.g., **999**).

The content of media storage device **999** is encrypted, using various levels of encryption to provide protection levels commensurate with copyright holders desires and required protection. For example, media storage device **999** is delivered to a user or critic for the purposes of review, the user inserts media storage device **999** into the appropriate storage device reader or connector coupled with the journalist's computer (e.g., **210**), and CCM **300** is installed on client system **200** in a manner clandestine to the user. Once installed, CCM **300** initiates a communication session with web server **250**/content server **251**, where content server **251** can provide authorization for the user to experience the media on media storage device **999**.

Accordingly, if the user, to whom demo media storage device **999** had been released, had demo media storage device **999** stolen, or if the user allowed alternative parties to experience the content of media storage device **999**, the unauthorized party would have to try to crack the encryption keys and the encryption of the actual content of media storage device **999**, consuming non-trivial amounts of time.

Thus, CCM **300** is able to control which users receive authorization to experience the media of media storage device **999**, how many times the user may experience the media, and CCM **300** may also define a period of time until the media

may no longer be accessible. This may enable copyright holders to release the content on an authorized media storage device, (e.g., **999**), prior to "pirated" copies flooding the market.

Accordingly, a demo media storage device **999** may be configured such that a first user may get a copy, a second user may get a copy, and if it is known that the second user will share the demo with a third and a fourth user, then the known users would be enabled to experience the media. Advantageously, by virtue of defining which users can access and experience the media, any unauthorized sharing of the media by one of the authorized users can be readily detected, and further sharing or experiencing of the media may be halted. Additionally, because the authorized user shared the media in an unauthorized manner, in a worse case scenario, criminal charges could be filed against that user.

It is noted that placing CCM/MSD **900** on a media storage device, (e.g., **999**), so as to enable installation of CCM **300** on client system **210** is one manner in which CCM **300** can be installed on client system **210**. An alternative manner in which CCM **300** can be installed on client computer system **210** is through "cross-pollination." For example, webcasters broadcast the media file to the user. The media file has a CCM **300** coupled with the media file, and upon downloading the media file onto client computer system **210**, embodiments of the present invention enable the installation of CCM **300** onto client computer system **210**. In another manner, CCM **300** is incorporated into and becomes part of an operating system operational on client system **210**. Alternatively, laws are passed that mandate the inclusion of CCM **300** on each client computer system **210**.

FIG. **11** is an exemplary logic/bit path block diagram **1100** of a client computer system, (e.g., **210**), configured with a copyright compliance mechanism (CCM) **300** for preventing unauthorized reproduction of copyrighted media according to an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in any manner similar to that described herein with reference to FIGS. **4**, **5**A-**5**D, **6**A, and **7**A-**7**C, **9**, and **10**.

Diagram **1100** of FIG. **11** includes a media storage device media extraction/creation application **1102** communicatively coupled to operating system input/output subsystem **1104** via wave in line **1121** and wave out line **1138**. Operating system input/output subsystem **1104** is coupled with media storage device class driver **1106** via wave in line **1123** and wave out line **1136**. Media storage device class driver **1106** is coupled with filter driver **1108** via wave in line **1125** and wave out line **1134**. Filter driver **1108** is coupled with media storage device port driver **1110** via wave in line **1127** and wave out line **1132**. Filter driver **1108** is shown to include a switch **1111**, controlled by CCM **300** via coupling **1160**. Media storage device port driver **1110** is coupled with media storage device drive **1112** via wave line in **1129** and wave line out **1130**. Media storage device **999**, shown to include CCM/MSD **900** is receivable by media storage device drive **1112**. Additionally, CCM **300** is coupled with operating system input/output subsystem **1104** via wave in line **1150** and wave out line **1151**.

In one embodiment, CCM **300** is coupled to and controls selectable switch **1111** in filter driver **1108**. Depending upon the copyright restrictions and/or licensing agreements applicable to a media file disposed on media storage device **999**, CCM **300** controls whether switch **1111** is open (shown), thus preventing the media file from reaching media extraction/creation application **1102**, or closed (not shown) so as to allow reproduction of the protected media file. Media extraction/creation application **1102** can be a "ripping" or "burning" application such as Nero, Roxio, Exact Audio Copy, or other readily available application.

Continuing with FIG. **11**, media storage device **999** is received by media storage device drive **1112**. CCM **300** determines whether media storage device **999** or media disposed thereon is protected by any copyright restrictions and/or licensing agreements, e.g., via detection of a copyright indicator bit. CCM **300** communicates with filter driver **1108** to control switch **1111** accordingly. In the present example, reproducing media storage device **999**, and/or the contents thereon, would violate applicable restrictions and/or agreements and therefore switch **1111** is in an open position such that the output path, (e.g., wave-out line **1138**), to media extraction/creation application **1102** is effectively blocked thereby preventing unauthorized reproduction of media storage device **999**.

It is particularly noted that by virtue of CCM **300** controlling switch **1111**, and therefore controlling wave-out line **1138**, any incoming copyright protected media disposed on a media storage device **999** can be prevented from being reproduced in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements related to the incoming media.

Advantageously, as new secure or proprietary file formats are developed, CCM **300** can be readily adapted to be functional therewith. Further, CCM/MSD **900** can prevent users from making unauthorized reproductions of media files, (e.g., recording, copying, ripping, burning, etc.). By using kernel level filter drivers, (e.g., filter driver **1108**), and getting to a low enough level within the operating system (OS) on client system **210**, CCM **300** can detect particular applications and when they request media storage device drive **1112** to poll the media file for copying, ripping, etc., and disable the data input path. CCM **300**, in this embodiment, deals with the input pathway.

In one embodiment, alternative applications that monitor the state of client computer system **210** can enable the autorun functionality of client computer system **210** or alternatively, invoke an automatic mechanism similar to autorun to ensure invocation of CCM **300** for compliance of copyright restrictions and/or licensing agreements applicable to media storage device **999** and/or the copyright protected media disposed thereon.

In one embodiment, CCM **300** can invoke a proprietary media player from media storage device **999**, or activate a proprietary media player resident and operable on client computer system **210**, or an alternative authorized media player resident on client computer system **210**, in a manner similar to that described herein with reference to FIG. **3**.

When media storage device **999** is a multisession device, e.g., a compact disk having a data session and a music session (audio tracks), and it is inserted into or communicatively coupled with media storage device drive **1112** such that its content is accessible, CCM **300** views the contents of the media storage device **999**, and in some operating systems the audio tracks will not be displayed. Instead, the data session is shown, as is an autorun file, (e.g., autorun protocol component **910**), and upon clicking, invokes a player application. CCM **300** can have a data session and files to which a user may not have access unless a player application is invoked.

In one embodiment, the player application could deposit a monitoring portion (e.g., agent program **304**) on client system **210**, which in one embodiment may reside on client computer system **210** subsequent to removal or decoupling of media storage device **999** from media storage device drive **1112**.

By virtue of content in a multisession media storage device **999**, which may not be directly accessible to most player

applications, at some point the player application can be invoked which can then install the CCM **300** into client system **210**, according to one embodiment of the present invention.

In one embodiment, a proprietary media player application is stored on media storage device **999**. However, it may not be automatically invoked. Upon some user intervention, e.g., inserting media storage device **999** into media storage device drive **1112**, the media player application is loaded onto client system **210** which has CCM **300** integrated therewith. Thus, CCM **300** is launched regardless of autorun being activated or de-activated, and mandates the user to utilize the proprietary media player application to experience the content of the media, (e.g., media files) on the media storage device **999**.

In an alternative embodiment, client computer system **210** has autorun turned off, wherein it is common for the user to be unable to play a media file unless a proprietary media player application is invoked. Activating the proprietary media player application can initiate an installation of those components of CCM **300** that are bypassed when autorun is not active.

Advantageously, by providing a copyright compliance mechanism, (e.g., **300**), which can be easily and readily installed on a client computer system, (e.g., **210**), one or more embodiments of the present invention can be implemented to control access to, the delivery of, and the user's experience with media content subject to copyright restrictions and/or licensing agreements, for example, as defined by the DMCA. Additionally, by closely associating a client computer system, (e.g., **210**), with the user thereof and the media content they received, embodiments of the present invention further can provide for accurate royalty recording.

FIG. **12** is an exemplary logic/bit path block diagram **1200** of a client computer system, (e.g., **210**), configured with a copyright compliance mechanism (CCM) **300** for selectively controlling access to copyrighted media in accordance with an embodiment of the present invention. Copyright compliance mechanism **300** is, in one embodiment, coupled with and operational on client system **210** in a manner similar to that described herein with reference to FIGS. **4**, **5**A-**5**D, **6**A, and **7**A-**7**C, **9**, **10**, and **11**.

Diagram **1200** of FIG. **12** includes a media hardware output device **111** communicatively coupled to operating system multimedia subsystem **1204** via wave in line **1221** and wave out line **1238**. Operating system multimedia subsystem **1204** is coupled with media playback/data extraction application **1206** via wave in line **1223** and wave out line **1236**. Additionally, CCM **300** is coupled with operating system multimedia subsystem **1204** via wave in line **1250** and wave out line **1251**. Media playback/data extraction application **1206** can be a ripping or burning application such as Nero, Roxio, Exact Audio Copy, or other readily available application that allows transformation of the data on media storage device **999**. Media playback/data extraction application **1206** is coupled with filter driver **1208** via wave in line **1225** and wave out line **1234**. Filter driver **1208** is coupled with media storage device class driver **1210** via wave in line **1227** and wave out line **1232**. Filter driver **1208** is shown to include a switch **1211**, controlled by CCM **300** via coupling **1260**.

Media storage device class driver **1210** is coupled with media storage device drive **1212** via wave line in **1229** and wave line out **1230**. Media storage device **999**, shown to include CCM/MSD **900**, is receivable by media storage device drive **1212**. Media player application **1201** is communicatively coupled with media storage device drive **1212** via connection **1205** and is communicatively coupled with CCM **300** via connection **1220**. In the embodiment of FIG. **13**, media storage device drive **1212** is communicatively coupled with media hardware output device **111** via a coupling (e.g., signal path **112** of FIG. **1**). Using signal path **112**, media storage device drive **1212** can output an analog signal directly to media hardware output device **111**. As described herein with reference to FIG. **1**, this allows accessing media disposed on media storage device **999** while bypassing data bus **101** of client computer system **210**.

In one embodiment, CCM **300** is coupled with and controls selectable switch **1211** in filter driver **1208**. Depending upon the copyright restrictions and/or licensing agreements applicable to a media file disposed on media storage device **999**, CCM **300** controls whether switch **1211** is open (shown), thus preventing the media file from reaching media playback/data extraction application **1206**, or closed (not shown) so as to allow reproduction of the protected media file.

Continuing with FIG. **12**, media storage device **999** is received by media storage device drive **1212**. CCM **300** determines whether media storage device **999** or media disposed thereon is protected by any copyright restrictions and/or licensing agreements, e.g., via detection of a copyright indicator bit. In an embodiment of the present invention, an agent program of CCM **300** accesses configuration information contained in a table of contents or other configuration file on media storage device **999**. In an embodiment, this allows individually determining whether the copyright indicator bit is set for each file stored on media storage device **999**. Alternatively, the copyright indicator bit can convey that the content of the entire CD is protected by copyright restrictions and/or licensing agreements. CCM **300** communicates with filter driver **1208** to control switch **1211** accordingly. In the present embodiment, reproducing media storage device **999** or a particular file stored on media storage device **999** would violate applicable restrictions and/or agreements and therefore switch **1211** is in an open position such that the digital data pathway to media playback/data extraction application **111**, (e.g., wave-out line **1238**), is effectively blocked thereby preventing unauthorized access of the protected media file stored on media storage device **999**. As a result, digital access of the media files that have their respective copyright indicator bits set is prevented. In an embodiment, a data access command to operating system multimedia subsystem **1204** triggers CCM **300** of open switch **1211**, thus blocking the digital data pathway of system **1200**. However, commands for controlling media storage device drive (e.g., play, pause, skip, etc.) from media playback application **1201** are allowed to permit accessing audio tracks stored on media storage device **999**. While the present embodiment recites audio information stored upon media storage device **999**, embodiments of the present invention are well suited for protecting other copyright protected media as well such as multimedia presentations as well.

It is particularly noted that by virtue of CCM **300** controlling switch **1211**, and therefore controlling wave-out line **1234**, copyright protected media disposed on a media storage device **999** can be prevented from being digitally accessed in an unauthorized manner in accordance with applicable copyright restrictions and/or licensing agreements by client computer system **210**. However, the copyright protected media can be accessed via signal path **112** and media hardware output device **111**.

As an example, when media storage device **999** is placed into media storage device drive **1212**, the table of contents is read by a monitoring agent (e.g., agent **304** of FIG. **3**). While the present embodiment recites reading the table of contents specifically, embodiments of the present invention are well suited to using other methods to determine whether media

disposed upon media storage device is protected by copyright restrictions and/or licensing agreements. For example, a hidden file on media storage device **999** may convey this information. Alternatively, a separate application disposed on media storage device **999** may convey information regarding copyright restrictions and/or licensing agreements in embodiments of the present invention. In one embodiment, this information is represented as a song or song title to discourage accessing and/or altering this information file. The monitoring agent determines that media storage device has 10 music tracks disposed thereupon and that the copyright indicator bit is set for tracks **1-8**. When media playback application **1201** receives a request to read any of tracks **1-8**, it causes media storage device drive **1212** to access the requested music track. However, CCM **300** opens switch **1211** when the copyright protected tracks are being accessed and thus prevents digitally accessing those tracks by client computer system **210**. The music tracks can still be accessed via signal path **112** and media hardware output device **111**. Thus, a user can listen to and enjoy the copyrighted music tracks, but is prevented from digitally accessing the music. This hinders attempts to reproduce the music tracks in an unauthorized manner while still permitting the user to enjoy the media in accordance with applicable copyright restrictions and/or licensing agreements related to the media. Attempts to create a digital copy of the protected media via media hardware output device **111** can be prevented as described herein with reference to FIGS. **5**A-**5**D. For example, a user may couple signal path **112** with a waveform input of media hardware output device **111** in an attempt to circumvent switch **1211**. However, CCM **300** may open switches **312**, **311**, and/or **511** concurrent with opening switch **1211** to prevent digitally accessing the protected media.

Advantageously, as new secure or proprietary file formats are developed, CCM **300** can be readily adapted to be functional therewith. Further, CCM/MSD **900** can prevent users from making unauthorized reproductions of media files, (e.g., recording, copying, ripping, burning, etc.). By using kernel level filter drivers, (e.g., filter driver **1208**), CCM **300** can detect unauthorized attempts to digitally access copyright protected media, and disable the digital data path.

As described herein with reference to FIG. **11**, alternative applications that monitor the state of client computer system **210** can enable the autorun functionality of client computer system **210** or alternatively, invoke an automatic mechanism similar to autorun to ensure invocation of CCM **300** for compliance of copyright restrictions and/or licensing agreements applicable to media storage device **999** and/or the copyright protected media disposed thereon.

In one embodiment, CCM **300** can invoke a proprietary media player from media storage device **999**, or activate a proprietary media player resident and operable on client computer system **210**, or an alternative authorized media player resident on client computer system **210**, as described herein with reference to FIG. **3**.

For example, when media storage device **999** is a multisession device, e.g., a compact disk having a data session and a music session (e.g., audio tracks), and it is inserted into media storage device drive **1212**, CCM **300** looks at the contents of the media storage device **999**, and in some operating systems the audio tracks will not be displayed. Instead, the data session is shown, as is an autorun file, (e.g., autorun protocol component **910**), and upon clicking an icon, invokes a player application. CCM **300** can have a data session and files to which a user may not have access unless a player application is invoked.

In one embodiment, the player application could deposit a monitoring portion (e.g., agent program **304**) on client system **210**, which in one embodiment may reside on client computer system **210** subsequent to removal of media storage device **999** from media storage device drive **1212**.

By virtue of content in a multisession media storage device **999**, which may not be directly accessible to most player applications, at some point the player application will be invoked which can then install the CCM **300** into client system **210**, according to one embodiment of the present invention.

In one embodiment, a proprietary media player application is stored on media storage device **999**. However, it is not automatically invoked. Upon some user intervention, e.g., inserting media storage device **999** into media storage device drive **1212**, the media player application is loaded onto client system **210** which has CCM **300** integrated therewith. Thus, CCM **300** is launched regardless of autorun being activated or not activated, and mandates the user to utilize the proprietary media player application to experience the content of the media files on the media storage device. **999**.

In an alternative embodiment, client computer system **210** has autorun off, wherein it is common for the user to be unable to play a media file unless a proprietary media player application is invoked. Activating the proprietary media player application can initiate an installation of those components of CCM **300** that are bypassed when autorun is not active.

Advantageously, by providing a copyright compliance mechanism, e.g., **300**, which can be easily and readily installed on a client computer system, (e.g., **210**), embodiments of the present invention can be implemented to control access to, the delivery of, and the user's experience with media content subject to copyright restrictions and/or licensing agreements, for example, as defined by the DMCA. Additionally, by closely associating a client computer system, e.g., **210**, with the user thereof and the media content they receive, embodiments of the present invention further provide for accurate royalty recording.

FIG. **13** is a block diagram of a communicative environment **1300** for identifying media in accordance with embodiments of the present invention. Included in communicative environment **1300** is a media storage device drive **1112** coupled with a client computer system **210** via a data/address bus **110**. A media identification module **1310** is disposed on client computer system **210**. Client computer system **210** is further coupled with media identification service **1320** and/or media provider **1330** via Internet **201**.

In embodiments of the present invention, a media identification module **1310** is used to identify the media files disposed on media storage device **999**. Currently, many CDs do not contain descriptive information, e.g., song titles, artist and album names, etc. As a result, when accessing the tracks on the CD the playback device only identifies a track number, e.g., "Disk 1, Track 1." However, there are services available via the Internet which allow a user to identify and/or manage their media files. One such service is the Gracenote CDDB® Music Recognition ServiceSM. Using the Gracenote service, a user inserts a music CD into their computer and uses a software application to contact the Gracenote database server which then identifies the artist, title, tracklist, and other information about the CD and displays the information on the user's computer.

In one embodiment, media identification module **1310** sends data to media identification service **1320** such as the number of songs on media storage device **999**, the length of each of those songs, and the order in which they are accessed. Using this information, media identification service **1320**

performs a database search until it finds media release (e.g., an album) having similar characteristics. Upon finding a match, media identification service **1320** can identify the album, artist, playlist, and other information applicable to media storage device **999** and send that information to client computer system **210**. A similar public domain service can be accessed at the following web address: http://www.freedb.org.

In an embodiment of the present information, client computer system **210** then contacts media provider **1330** to determine whether any of the tracks disposed upon media storage device **999** are copyright protected material. Using the information provided by media information service **1320**, media provider **1330** can identify which of the tracks disposed upon media storage device **999** are copyright protected material and send this information back to client computer system **210**. Using the information, provided by media provider **1330**, CCM **300** can selectively allow access to tracks on media storage device **999**, either allowing/denying digital access to media storage device **999** as a whole, or on a track-by-track basis. Additionally, a user can be permitted to make a given number of copies of the media disposed upon media storage device **999**, or may be permitted to access the copyright protected material for a given period of time in accordance with an end user agreement. In another embodiment, the database of media identification service **1320** may also provide copyright information about the tracks disposed upon media storage device **999** to client computer system **210**.

In another embodiment, media identification module **1310** sends waveform data and/or text data to media identification service **1320** to identify the media disposed upon media storage device **999**. For example, the Gracenote MusicIDSM service uses waveform analysis to identify music tracks for service subscribers. In an embodiment of the present invention, music identification module **1310** sends waveform data of tracks being accessed from media storage device **999** to media identification service **1320**. In one embodiment, this waveform data is captured by a sampling buffer (not shown) that is in the data path between, for example, media storage device drive **1212** and media storage device class driver **1210** of FIG. **12**. While the present embodiment describes placing the sampling buffer in this portion of the data path, embodiments of the present invention are well suited for placing the sampling buffer in another portion of the data path as well, e.g., between media storage device class driver **1210** and filter driver **1208** of FIG. **12**. The Gracenote MusicIDSM service also uses text-based recognition in conjunction with the waveform analysis to provide a higher degree of certainty in identifying the music tracks. Upon identifying the media disposed upon media storage device **999**, media identification module **1310** can contact media provider **1330** to determine whether any of the media is copyright protected material. Alternatively, the waveform and/or text data may be sent directly to media provider **1330** to determine whether any of the tracks disposed upon media storage device **999** are copyright protected material.

In one embodiment, media identification module **1310** samples the data as it passes through the sample buffer and creates an abstraction of the data which is sent to media identification service **1320** or media provider **1330**. Media identification module **1310** then performs a fast Fourier transform of the sampled data and sends the result to either media identification service **1320** or media provider **1330** to identify the media disposed upon media storage device **999**. While the present embodiment recites performing a fast Fourier transform of the sampled data, embodiments of the present invention are well suited for performing other transformations of the sampled data before sending it to media identification service **1320** or media provider **1330**.

In one embodiment, media identification module **1310** is disposed upon media storage device **999**. In one embodiment, the installation of media identification module **1310** onto client computer system **210** is performed clandestine with respect to the user and is initiated by inserting media storage device **999** into an appropriate media storage device drive, e.g. a magnetic/optical disk drive or alternative device drive coupled with client system **210**.

The foregoing disclosure regarding specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and many modifications and variations are possible in light of above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, to thereby enable others skilled in the art to best utilize the invention and various embodiments with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the Claims appended hereto and their equivalents.

What is claimed is:

1. A method for selectively controlling access to media disposed on a media storage device, said method comprising:
- installing a compliance mechanism on a computer system, said compliance mechanism communicatively coupled with said computer system when installed thereon, said compliance mechanism for enforcing compliance with a usage restriction applicable to said media;
- obtaining control of a data bus data pathway operable on said computer system, the data bus accessible by a processor of the computer system;
- obtaining control of a sound card data pathway operable on said computer system;
- accessing data disposed on said media storage device to determine said usage restriction; and
- selectively preventing said computer system from digitally accessing said media via said data bus data pathway while enabling presentation of the media via said sound card data pathway, said sound card data pathway inaccessible to the processor of the computer system.

2. The method as recited in claim **1** wherein said usage restriction comprises a copyright restriction or a licensing agreement associated with said media.

3. The method as recited in claim **1** further comprising:
- installing a filter driver on said computer system, said filter driver configured to be coupled with and operable in conjunction with said compliance mechanism and for controlling said data bus data pathway and said sound card data pathway.

4. The method as recited in claim **3** wherein said filter driver prevents digitally accessing said media.

5. The method as recited in claim **1** further comprising:
- activating an autorun mechanism disposed on said media storage device in response to a device drive coupled with said computer system receiving said media storage device, said autorun mechanism for initiating said installing said compliance mechanism on said computer system.

6. The method as recited in claim **1** further comprising:
- presenting said media using an analog sound rendering device communicatively coupled with said device drive via an analog signal path.

7. The method as recited in claim **5** wherein said autorun mechanism is activated in response to detection of a usage

restriction indicator disposed on said media storage device, subsequent to said device drive receiving said media storage device.

8. The method as recited in claim **5** wherein said autorun mechanism is activated in response to detection of a selection of an icon representing said media.

9. The method as recited in claim **1** further comprising:

bypassing said installing said compliance mechanism on said computer system if an instance of said compliance mechanism is predisposed on said computer system.

10. The method as recited in claim **1** further comprising:

initiating a communication session between said computer system and a network to which said computer system is coupled and from which said compliance mechanism is available;

comparing said compliance mechanism present on said computer system and said compliance mechanism available from said network; and

updating said compliance mechanism on said computer system.

11. The method as recited in claim **1** further comprising:

deactivating said compliance mechanism upon detection of uncoupling of said media storage device from said computer system.

12. The method as recited in claim **1** further comprising:

uninstalling said compliance mechanism upon detection of uncoupling of said media storage device from said computer system.

13. The method as recited in claim **1** wherein said media storage device upon which said media is disposed is from a group of media storage devices consisting of a compact disk (CD), a mini CD, a digital versatile disk (DVD), a mini DVD, a compact flash card, a secure digital (SD) card, a memory stick, a digital audio tape (DAT), a digital video tape (DVT), a holographic storage object, a magneto-optical disk, a multi-layer fluorescent disk, an optical disk, and a magnetic disk.

14. The method as recited in claim **1** further comprising:

installing a media identification mechanism on said computer system;

utilizing said media identification mechanism to identify an instance of media disposed on said media storage device;

determining a usage restriction applicable to said instance of media; and

using said compliance mechanism to selectively control digitally accessing said instance of media based upon said determining.

15. The method as recited in claim **14** further comprising:

activating an autorun mechanism disposed on said media storage device in response to a device drive coupled with said computer system receiving said media storage device, said autorun mechanism for initiating installing said media identification mechanism on said computer system.

* * * * *

ADR

JS 44 (Rev. 12/12) cand rev (1/15/13)

CIVIL COVER SHEET

E-FILING

The JS 44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. *(SEE INSTRUCTIONS ON NEXT PAGE OF THIS FORM.)*

I. (a) PLAINTIFFS
Media Rights Technologies, Inc.,

(b) County of Residence of First Listed Plaintiff Santa Cruz County
(EXCEPT IN U.S. PLAINTIFF CASES)

(c) Attorneys *(Firm Name, Address, and Telephone Number)*
MCKOOL SMITH HENNIGAN, P.C.
255 Shoreline Drive, Suite 510, Redwood Shores, CA 94065
Telephone: (650) 394-1400, Facsimile: (650) 394-1422

DEFENDANTS
Microsoft Corporation,

County of Residence of First Listed Defendant Santa Clara County
(IN U.S. PLAINTIFF CASES ONLY)
NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED.

Attorneys *(If Known)*

CV 13-01916 PSG

II. BASIS OF JURISDICTION *(Place an "X" in One Box Only)*

- ☐ 1 U.S. Government Plaintiff
- ☒ 3 Federal Question *(U.S. Government Not a Party)*
- ☐ 2 U.S. Government Defendant
- ☐ 4 Diversity *(Indicate Citizenship of Parties in Item III)*

III. CITIZENSHIP OF PRINCIPAL PARTIES *(Place an "X" in One Box for Plaintiff and One Box for Defendant)*
(For Diversity Cases Only)

	PTF	DEF		PTF	DEF
Citizen of This State	☐ 1	☐ 1	Incorporated *or* Principal Place of Business In This State	☒ 4	☐ 4
Citizen of Another State	☐ 2	☐ 2	Incorporated *and* Principal Place of Business In Another State	☐ 5	☒ 5
Citizen or Subject of a Foreign Country	☐ 3	☐ 3	Foreign Nation	☐ 6	☐ 6

IV. NATURE OF SUIT *(Place an "X" in One Box Only)*

CONTRACT	TORTS		FORFEITURE/PENALTY	BANKRUPTCY	OTHER STATUTES
☐ 110 Insurance	PERSONAL INJURY	PERSONAL INJURY	☐ 625 Drug Related Seizure of Property 21 USC 881	☐ 422 Appeal 28 USC 158	☐ 375 False Claims Act
☐ 120 Marine	☐ 310 Airplane	☐ 365 Personal Injury - Product Liability	☐ 690 Other	☐ 423 Withdrawal 28 USC 157	☐ 400 State Reapportionment
☐ 130 Miller Act	☐ 315 Airplane Product Liability	☐ 367 Health Care/ Pharmaceutical Personal Injury Product Liability		PROPERTY RIGHTS	☐ 410 Antitrust
☐ 140 Negotiable Instrument	☐ 320 Assault, Libel & Slander	☐ 368 Asbestos Personal Injury Product Liability		☐ 820 Copyrights	☐ 430 Banks and Banking
☐ 150 Recovery of Overpayment & Enforcement of Judgment	☐ 330 Federal Employers' Liability	PERSONAL PROPERTY		☒ 830 Patent	☐ 450 Commerce
☐ 151 Medicare Act	☐ 340 Marine	☐ 370 Other Fraud		☐ 840 Trademark	☐ 460 Deportation
☐ 152 Recovery of Defaulted Student Loans (Excludes Veterans)	☐ 345 Marine Product Liability	☐ 371 Truth in Lending	LABOR	SOCIAL SECURITY	☐ 470 Racketeer Influenced and Corrupt Organizations
☐ 153 Recovery of Overpayment of Veteran's Benefits	☐ 350 Motor Vehicle	☐ 380 Other Personal Property Damage	☐ 710 Fair Labor Standards Act	☐ 861 HIA (1395ff)	☐ 480 Consumer Credit
☐ 160 Stockholders' Suits	☐ 355 Motor Vehicle Product Liability	☐ 385 Property Damage Product Liability	☐ 720 Labor/Management Relations	☐ 862 Black Lung (923)	☐ 490 Cable/Sat TV
☐ 190 Other Contract	☐ 360 Other Personal Injury		☐ 740 Railway Labor Act	☐ 863 DIWC/DIWW (405(g))	☐ 850 Securities/Commodities/ Exchange
☐ 195 Contract Product Liability	☐ 362 Personal Injury - Medical Malpractice		☐ 751 Family and Medical Leave Act	☐ 864 SSID Title XVI	☐ 890 Other Statutory Actions
☐ 196 Franchise			☐ 790 Other Labor Litigation	☐ 865 RSI (405(g))	☐ 891 Agricultural Acts
			☐ 791 Employee Retirement Income Security Act		☐ 893 Environmental Matters
					☐ 895 Freedom of Information Act
					☐ 896 Arbitration
REAL PROPERTY	CIVIL RIGHTS	PRISONER PETITIONS		FEDERAL TAX SUITS	☐ 899 Administrative Procedure Act/Review or Appeal of Agency Decision
☐ 210 Land Condemnation	☐ 440 Other Civil Rights	Habeas Corpus:	IMMIGRATION	☐ 870 Taxes (U.S. Plaintiff or Defendant)	☐ 950 Constitutionality of State Statutes
☐ 220 Foreclosure	☐ 441 Voting	☐ 463 Alien Detainee	☐ 462 Naturalization Application	☐ 871 IRS—Third Party 26 USC 7609	
☐ 230 Rent Lease & Ejectment	☐ 442 Employment	☐ 510 Motions to Vacate Sentence	☐ 465 Other Immigration Actions		
☐ 240 Torts to Land	☐ 443 Housing/ Accommodations	☐ 530 General			
☐ 245 Tort Product Liability	☐ 445 Amer. w/Disabilities - Employment	☐ 535 Death Penalty			
☐ 290 All Other Real Property	☐ 446 Amer. w/Disabilities - Other	Other:			
	☐ 448 Education	☐ 540 Mandamus & Other			
		☐ 550 Civil Rights			
		☐ 555 Prison Condition			
		☐ 560 Civil Detainee - Conditions of Confinement			

V. ORIGIN *(Place an "X" in One Box Only)*

☒ 1 Original Proceeding ☐ 2 Removed from State Court ☐ 3 Remanded from Appellate Court ☐ 4 Reinstated or Reopened ☐ 5 Transferred from Another District *(specify)* ☐ 6 Multidistrict Litigation

VI. CAUSE OF ACTION
Cite the U.S. Civil Statute under which you are filing *(Do not cite jurisdictional statutes unless diversity)*:
35 U.S.C. §§ 271 et seq. and 281-285
Brief description of cause:
This is a civil action for patent infringement arising under the patent laws of the United States.

VII. REQUESTED IN COMPLAINT:
☐ CHECK IF THIS IS A **CLASS ACTION** UNDER RULE 23, F.R.Cv.P.
DEMAND $
CHECK YES only if demanded in complaint:
JURY DEMAND: ☒ Yes ☐ No

VIII. RELATED CASE(S) IF ANY *(See instructions)*:
JUDGE DOCKET NUMBER

DATE 04/25/2013
SIGNATURE OF ATTORNEY OF RECORD /s/ Courtland Reichman

IX. DIVISIONAL ASSIGNMENT (Civil L.R. 3-2)
(Place an "X" in One Box Only) ☐ SAN FRANCISCO/OAKLAND ☑ SAN JOSE ☐ EUREKA

JS 44 Reverse (Rev. 12/12)

INSTRUCTIONS FOR ATTORNEYS COMPLETING CIVIL COVER SHEET FORM JS 44

Authority For Civil Cover Sheet

The JS 44 civil cover sheet and the information contained herein neither replaces nor supplements the filings and service of pleading or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. Consequently, a civil cover sheet is submitted to the Clerk of Court for each civil complaint filed. The attorney filing a case should complete the form as follows:

I.(a) **Plaintiffs-Defendants.** Enter names (last, first, middle initial) of plaintiff and defendant. If the plaintiff or defendant is a government agency, use only the full name or standard abbreviations. If the plaintiff or defendant is an official within a government agency, identify first the agency and then the official, giving both name and title.

(b) **County of Residence.** For each civil case filed, except U.S. plaintiff cases, enter the name of the county where the first listed plaintiff resides at the time of filing. In U.S. plaintiff cases, enter the name of the county in which the first listed defendant resides at the time of filing. (NOTE: In land condemnation cases, the county of residence of the "defendant" is the location of the tract of land involved.)

(c) **Attorneys.** Enter the firm name, address, telephone number, and attorney of record. If there are several attorneys, list them on an attachment, noting in this section "(see attachment)".

II. **Jurisdiction.** The basis of jurisdiction is set forth under Rule 8(a), F.R.Cv.P., which requires that jurisdictions be shown in pleadings. Place an "X" in one of the boxes. If there is more than one basis of jurisdiction, precedence is given in the order shown below.
United States plaintiff. (1) Jurisdiction based on 28 U.S.C. 1345 and 1348. Suits by agencies and officers of the United States are included here.
United States defendant. (2) When the plaintiff is suing the United States, its officers or agencies, place an "X" in this box.
Federal question. (3) This refers to suits under 28 U.S.C. 1331, where jurisdiction arises under the Constitution of the United States, an amendment to the Constitution, an act of Congress or a treaty of the United States. In cases where the U.S. is a party, the U.S. plaintiff or defendant code takes precedence, and box 1 or 2 should be marked.
Diversity of citizenship. (4) This refers to suits under 28 U.S.C. 1332, where parties are citizens of different states. When Box 4 is checked, the citizenship of the different parties must be checked. (See Section III below; **NOTE: federal question actions take precedence over diversity cases.**)

III. **Residence (citizenship) of Principal Parties.** This section of the JS 44 is to be completed if diversity of citizenship was indicated above. Mark this section for each principal party.

IV. **Nature of Suit.** Place an "X" in the appropriate box. If the nature of suit cannot be determined, be sure the cause of action, in Section VI below, is sufficient to enable the deputy clerk or the statistical clerk(s) in the Administrative Office to determine the nature of suit. If the cause fits more than one nature of suit, select the most definitive.

V. **Origin.** Place an "X" in one of the six boxes.
Original Proceedings. (1) Cases which originate in the United States district courts.
Removed from State Court. (2) Proceedings initiated in state courts may be removed to the district courts under Title 28 U.S.C., Section 1441. When the petition for removal is granted, check this box.
Remanded from Appellate Court. (3) Check this box for cases remanded to the district court for further action. Use the date of remand as the filing date.
Reinstated or Reopened. (4) Check this box for cases reinstated or reopened in the district court. Use the reopening date as the filing date.
Transferred from Another District. (5) For cases transferred under Title 28 U.S.C. Section 1404(a). Do not use this for within district transfers or multidistrict litigation transfers.
Multidistrict Litigation. (6) Check this box when a multidistrict case is transferred into the district under authority of Title 28 U.S.C. Section 1407. When this box is checked, do not check (5) above.

VI. **Cause of Action.** Report the civil statute directly related to the cause of action and give a brief description of the cause. **Do not cite jurisdictional statutes unless diversity.** Example: U.S. Civil Statute: 47 USC 553 Brief Description: Unauthorized reception of cable service

VII. **Requested in Complaint.** Class Action. Place an "X" in this box if you are filing a class action under Rule 23, F.R.Cv.P.
Demand. In this space enter the actual dollar amount being demanded or indicate other demand, such as a preliminary injunction.
Jury Demand. Check the appropriate box to indicate whether or not a jury is being demanded.

VIII. **Related Cases.** This section of the JS 44 is used to reference related pending cases, if any. If there are related pending cases, insert the docket numbers and the corresponding judge names for such cases.

Date and Attorney Signature. Date and sign the civil cover sheet.